Archaeology of India

Amar Nath Khanna

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Archaeology of India

RETROSPECT AND PROSPECT

Amar Nath Khanna

Foreword by

Shri M. N. Deshpande

Director General (Retd.)

Archaeological Survey of India

Clarion Books

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Colour illustrations: Courtesy of the National Museum, New Delhi.

Photograph of image of Pasupatinath, from Talagaon, District Bilaspur (Madhya Pradesh): courtesy of H. Michael.

Other plates and line drawings: courtesy of the Archaeological Survey of India, New Delhi.

Foreword

India has a glorious past and this can be appreciated by studying its monumental heritage, literature and traditions. Archaeological excavations, however, lend authenticity to such a study. India is fortunate that it has one of the oldest organized Archaeological Departments in the world which has endeavoured to unravel and preserve its cultural heritage.

Indian monuments attract thousands of curious tourists from within the country and without. It is very necessary that this curiosity is fostered and nourished with authentic information so as to enrich the experience of a visitor. Herein lies the need for a book which should be at once readable, authentic and welcome to serious reader and layman alike. Shri Amar Nath Khanna has had a long association with the Archaeological Survey of India. He joined the Survey in 1957 and came in contact with eminent archaeologists. His inherent curiosity coupled with industry made him take a deeper interest in archaeology. His first article on Mandu was published in the "Bhavan's Journal" of the Bharatiya Vidya Bhavan in 1964. Thereafter, he started pursuing Indian archaeology systematically, studying monuments and participating in excavations. He underwent training at the School of Archaeology run by the Archaeological Survey of India and became well equipped to evaluate and appreciate the work done by devoted bands of archaeologists over the years. It is indeed gratifying that he has ventured to write a book on Indian archaeology which, I am sure, will meet the long-felt need of students, tourists and serious-minded readers.

From the dawn of civilization to the present day, India has been a place of many interesting developments in the domains of art, architecture, science and technology. From his humble beginning as tool-maker, Man in India emerged step by step to higher echelons of culture. In Madhya Pradesh, a new development has been ushered in with the discovery of painted caverns at Bhimbetka. Earlier, the Archaeological Survey of India had protected a few such caverns at Mirzapur and Adamgarh. Recent explorations by Dr. V.S. Wakankar and officers of the Survey have brought to light literally thousands of such caverns. This has brought to the fore a new realm of studies in the art and culture of Stone Age Man.

In the early twenties of the present century, the history of India was pushed back by several centuries and a prosperous civilization known as the Indus Valley Civilization was discovered by archaeologists with its home in Sind and the Punjab region of undivided India. This gave a great fillip to archaeological activity and in the process no less than two hundred sites of this culture have since been discovered. Among these, important sites like Lothal, Kalibangan, Ropar, Surkotada, Banawali and Daimabad have since been excavated. The Indian sub-continent has emerged as the mother of one of the oldest civilizations in the world. Indian literature, traditions and inscriptions came to be studied with greater fervour and Indian history came to be re-written on the firm foundations of archaeology. If today, for example, we review Mauryan history, we find that, every few years, in the quarter of a century, a new Ashokan edict was discovered and in 1974, four more edicts were discovered in Karnataka at Nittur, Tekkalakota and Udegolam, not to speak of the discovery of an Ashokan edict at New Delhi, the capital of India, in the year 1966. Similarly, at Pangoraria, District Sehore, Madhya Pradesh, an Ashokan rock-edict was discovered in the year 1975. Earlier, two Ashokan edicts had also been discovered, one at Sopara in Maharashtra and the other at Gujarra in Madhya Pradesh. Ashokan edicts in Kharoshthi, Greek and Aramaic which were discovered in Afghanistan speak of the extension of Mauryan influence. Archaeological excavations, however, reveal a new dimension of the study of Mauryan archaeology. The Northern Black Polished ware used by the Mauryan community is now discovered as far south as Amaravati and as far west as Kandahar in Afghanistan, where Ashokan inscriptions have also been discovered.

A study of the variety of small objects from excavations has helped in understanding the life of the common people which is of enduring interest. All this has added to our knowledge and understanding of the development of the personality of India.

While many monuments of the pre-Christian era which existed in the Gangetic valley have perished as they were built of brick and timber, many others have survived relatively unspoilt as they were excavated out of an enduring material. I am referring to the rock-cut monuments that we have in India in Bihar, Orissa, Maharashtra, Andhra Pradesh and Gujarat and many more of a still later date in other parts of India such as Karnataka, Madhya Pradesh and even in Himachal Pradesh. All these rock-cut monuments ranging in date from the third century B.C. to about the twelfth century A.D. preserve a magnificent architectural tradition, the like of which cannot be seen in such variety and grandeur in other parts of the world. Among these monuments, Ajanta and Ellora stand out like gems where we preserve mural paintings giving a very unique glimpse of the way of life of ancient India which no amount of written word could give. The variegated patterns of life of noblemen, villagers and those times, the variety of architecture, of household goods, furniture, textiles, flora and fauna — all are vividly portrayed as if imparting flesh and life to the otherwise dry descriptions found in literature.

The Indian temple was a unique institution and its development from almost the fifth century onwards is a fascinating tale. Besides furnishing material for reconstructing the religious history of India, it casts a spell on the student of art and architecture. It is in the temple — the abode of the Lord — that beauty and sublimity of divine experience meet so as to create a feeling of *ananda* — unmixed joy. The regional development of temple styles sometimes excelling in sculpturesque decoration or in architectural splendour has rarely a parallel elsewhere in the world.

The rise of Islam in India allowed a new flowering of an architectural tradition of which the best examples can be seen in Agra, Delhi, Ahmedabad, Jaunpur, Bijapur and other places.

Indian archaeology has immense possibilities. Indian universities have taken to intensive archaeological work. Explorations, architectural studies and study of inscriptions and coins are adding new dimensions to the study of archaeology. It is hoped that before long India will be able to take up archaeological excavations in the neighbouring countries and thus help in the understanding of the total cultural heritage of Asia and its contacts with other civilizations.

Shri Khanna has tried to deal with all aspects of the cultural wealth of India through the eyes of an archaeologist. He has placed equal emphasis on the new material which the spade of the archaeologist brought to light during this century. He has also given a glimpse of the work of the Archaeological Survey of India in foreign countries like Afghanistan, Egypt and Nepal

M.N. DESHPANDE
Director General (Retd.),
Archaeological Survey of India,
New Delhi.

To
my parents

खल्लान्वय-प्रसिद्धाय
खिल्लूरामाय श्रीमते।
पित्रे मात्रे तथा क्षेम्यै
श्रद्धयेदं समर्प्यते ॥

To
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Preface

During the last thirtyfive years, I have visited and made an on-the-spot study of most of the important places of archaeological interest in the Indian sub-continent, for nothing is more fascinating in the records of a country than the objects recovered from the depths of the earth or the standing monuments— mute witnesses to past glory. This has led me to a study of over 130 years of archaeological pursuits, including results of excavations at medieval sites during the last ten years, and the work of Indian archaeologists abroad. Recent discoveries in Pakistan have also been taken into account, for the present-day political boundaries do not necessarily conform to ancient cultural zones, and I am grateful to Dr. M.R. Mughal for this.

I have written this book keeping in mind the student of archaeology as well as the general reader interested in the cultural heritage of India. An attempt has, therefore, been made to steer clear of both the extremes of specialization and generalisation.

The first edition was prepared under the guidance of the late Shri A. Ghosh. In the preparation of this second edition brought upto 1991, I have received active cooperation and valuable help from my friends and senior archaeologists associated with the Archaeological Survey of India — Sarvashri M.C. Joshi, I.K. Sarma, W.H. Siddiqui, B.M. Pande, A.S. Bisht, A.K. Sharma, R.S. Bisht, A.K. Sinha and R.K. Dalal. Without the remarkable contributions made by a large number of workers in the field, both known and unknown, it would have been impossible for me to bring out the book. I am indebted to them all. I am also obliged to Prof. M. N. Deshpande, Director General (Retd.), Archaeological Survey of India, for writing the Foreword to this book. My wife Lata and Children, Sanjay and Rashmi, have given help such as only they could have given.

In the Rashtrapati Bhavan, Shri Jagdish Chand, my personal assistant, has helped me with spare time assistance of various kinds. I am grateful to Shri Ganpat Rai Kansal for typing the manuscript meticulously and to Shri A.K. Sinha for preparing the index to this edition.

A book of this kind can always be improved and should readers — both the specialist and the lay — wish to offer suggestions, they would be doing me a favour.

B-3/47B, Keshavpuram
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AMAR NATH KHANNA

History of Archaeological Pursuits

The beginnings of archaeological studies in India were not marked by any spectacular event comparable in its dramatic significance to either the discovery of the Rosetta Stone in Egypt or the opening up of the lost city of Pompeii in Italy. In 1786, a Madras peasant found, below the ruins of a Hindu temple near Nellore, a number of Roman coins and medals, belonging to the second century A.D. But little notice seems to have been taken of this very important event which, had it been followed up, may have led to important discoveries.

Ancient India seems to have never experienced the urge for archaeological investigation and medieval India too remained practically unaffected by it to the end.

Kalhana (in eleventh century) was the one historian in Indian antiquity who showed an objective approach. He seems to have understood, though imperfectly, the value of the material remains of bygone ages to historical reconstruction. His masterpiece, *Rajatarangini*, is endowed with an objectivity which had never before been met within Indian experience. This literary production is an admirable collection of historical facts presented in the illuminating garb of poetry and excels in the region of fine art. History takes wings from the inimitable pen of Kalhana.

Abu Raihan al-Biruni (in eleventh century) was the one Muslim historian who showed a true scientific understanding and an objective approach. Later Abul Fazl (in sixteenth century) displayed a more scholarly approach to the material vestiges of the past and his *Ain-i-Akbari* embodies fairly accurate notices of a large number of historical monuments and sites. But the great Abul Fazl was also an exception.

For the sprouting of a true antiquarian spirit in India, the stimulus ultimately came from the West only towards the end of the eighteenth century.

The mind of intellectual Europe was drawn to India's past by the writings of the numerous travellers who had visited this land of wonder, which was then little known, and had afforded the West its first glimpse of the grandeur that was her history.

Dr. Samuel Johnson, one of the greatest minds of eighteenth-century European enlightenment, was the first to perceive the supreme need for systematic investigations of India's past remains; he also impressed this on the then Governor-General, Warren Hastings, in 1774. Much of what Hastings did to revive Persian and Sanskrit studies in India was largely inspired by an impassioned voice calling out to him from thousands of miles away.

The First Century (1784-1899)

The task of translating into reality the magnificent ideas which Dr. Johnson desired to disseminate had to wait until Sir William Jones, whose master-mind was stirred by the same zeal, arrived in India as a Puisne Judge of the Calcutta Supreme Court, and was able to take this up as the one great mission of his eventful life. He gathered round him a band of enthusiastic antiquarians with whose active collaboration he was able to form, on January 15, 1784, under the name 'Asiatick Society', an institution for enquiring, among other things, 'into the History. . . the Antiquities, Arts, Sciences and Literatures of Asia'. This was indeed a red letter day for Indian archaeology.

Jones was a master-mind and to him goes the distinction of being the first to realize the need for co-ordinating the various efforts that were being made in the country in regard to antiquities and to find out the means by which this co-ordination could be effected for conducting further investigations on systematic lines. To make known the results of these new efforts, a journal, *The Asiatick Researches,* was started in 1788. In 1814, a museum was also set up to house the objects collected by the Society's growing band of workers. The start made in Bengal was soon emulated in other parts of the country, and 'Literary Societies' modelled on the 'Asiatick Society' were formed in Bombay and Madras. Thus the stage was finally set for pursuing systematic investigations into the antiquarian remains of India.

Though the scholars who had initiated antiquarian studies in India under Jones were the true pioneers in the field of Indian archaeology, their activities were not inspired by purely archaeological aims. They did not know the correct scope of the science of archaeology; the techniques relating to survey, excavation or interpretation were also unknown to them. Notwithstanding these limitations and shortcomings, the debt which Indian archaeology owes to these early enthusiasts is immeasurable.

Indian archaeology is most indebted to Sir William Jones himself. The discovery made by him of the synchronism between Chandragupta Maurya and Alexander the Great provided Indian archaeology with its first positive date. To him also goes the credit for fixing the location of the classical *Palibothra* at the confluence of the Ganga and the Son, thus providing a starting point for future investigations into ancient Indian geography. Another discovery of far-reaching importance that he made was that of affinities between Sanskrit and Persian, on the one hand, and Greek, Latin, Celtic and the Germanic languages, on the other.

Charles Wilkins, a close associate of Jones, unlocked the mystery of the Gupta as well as the Kutila script and laid the foundation of epigraphical studies in India. The growth of these studies was materially helped by the

labours of Radhacanta Sarman, an Indian scholar. H.T. Colebrooke and H.H. Wilson placed Indian epigraphy, for the first time, on a firm and sound footing.

Captain E. Fell made the dramatic discovery of the magnificent *stupa* at Sanchi. Ensign James T. Blunt took the measurements of the Qutb Minar and published them in *The Asiatick Researches* (Vol. IV) in 1795. Captain (later Colonel) James Tod was the pathfinder in the field of Rajput antiquities.

In western India, Sir Charles Warre Malet, Salt, Captain Sydenham, Colonel Sykes, William Erskine and others did useful work. Erskine also published the first notice of the wonderful caves at Ajanta.

In south India, William Chambers undertook the first antiquarian studies. He visited the imposing ruins of Mahabalipuram first in 1772 and again in 1776. In 1788, he described them in *The Asiatick Researches*. The guiding spirit of antiquarian research in the South, however, was Colonel Colin Mackenzie. He also prepared the first careful plans and drawings of the great Buddhist *stupa* at Amravati. He was again the first to call attention to the importance of the megalithic monuments of south India.

So far, however, all the efforts were individualistic and the Government of India was not inclined to lend its support. But in 1800, Francis Buchanan was entrusted by the Marquis of Wellesley with the carrying out of a survey of the entire Mysore territory. His report contained, *inter alia*, interesting notices of the antiquities of India, the first to be published under official aegis.

Buchanan made remarkable archaeological reconnaissances in eastern India. For many years to come, no effort was, however, made to find a successor to him to carry on the work so splendidly begun by him. The Government of India was apathetic to the need for a systematic exploration of archaeological sites and it remained equally unconscious of its moral obligation to protect and conserve the most beautiful and perfect collection of historical monuments in the world. Even acts of vandalism perpetrated on monuments were overlooked.

To James Prinsep (b. August 20, 1799), Assay Master of the Calcutta Mint from 1832 to 1840, goes the credit for helping to free archaeology from its antiquarian and literary overtones. When he was appointed Secretary of the Asiatick Society, he assumed the virtual direction of the archaeological activities in India and marched from discovery to discovery with amazing speed. He was an unrivalled master in epigraphic and numismatic techniques and did excellent field-surveys and precise recordings. He transformed the entire character of archaeology by directing it to systematic survey operations in the field. He contributed to and edited the *Gleanings of Science,* which later became *The Journal of the Asiatick Society of Bengal.* He remoulded the embryonic museum of the Asiatick Society according to his requirements and developed it into a repository for important archaeological finds. Among his achievements, the most remarkable was solving the mystery of both the Kharoshthi and Brahmi scripts between 1834 and 1837. Thus were opened the gates of the sources of ancient Indian history and culture. After his death on April 22, 1840, from softening of the brain caused by overwork, the citizens of Calcutta erected in his memory Prinsep's Ghat, south of Fort William. Prinsep left Indian archaeology practically leaderless.

Ram Raz's *Essay on the Architecture of the Hindus,* published from London in 1834 as a posthumous work, has been much appreciated by art-historians for its author's logical approach and sound methodology based on the traditional *Silpa* texts for the study of temple architecture. It was about the same time that

James Prinsep was also interested in Indian architecture. In fact, prior to his decipherment of Brahmi, he had published several architectural works of major importance. According to Sourindranath Ray, 'he had shown equal clear-sightedness in emphasizing the value of accurate field study and precise recording, a predilection for which he had demonstrated as early as 1820 by executing a series of accurate plans and drawings of the streets and buildings of Banaras.'

In his paper 'James Prinsep on Temple Architecture', (published in *Srinidih: Perspectives in Indian Archaeology, Art and Culture*, Shri K.R. Srinivasan Festschrift, ed. K.V. Raman, etc., Madras, 1983, pp. 423-429), M.C. Joshi writes: 'Prinsep who had a scientific mind was perhaps the first known scholar to attempt a study of the Indian temple architecture in the light of the prevalent traditions whether preserved with the craftsmen, maistries or masons, etc., or in *Silpa* texts or in their extracts as available to him. But like most of the later writers on temple architecture, he could not infer much from the texts and felt that these hardly afford any information of a practical or satisfactory nature. Prinsep's dissatisfaction with the *Silpa* texts was perhaps due to the fact that he failed to realize that architectural data contained in them have to be studied and applied to extant structural art in relation to time and space. The principal defect in his methodology was that he attempted to apply the ancient *Vastu* tradition to contemporary shrines at Varanasi without trying to understand regional implications and the time gap involved. Even in the interpretations of some architectural terms, Prinsep committed mistakes. Unlike him, Ram Raz's success in understanding the *Silpa* text was on account of a better preserved tradition in south India with a continuity and his own familiarity with his heritage and environment. Yet, Prinsep's initial attempt to understand Hindu temple architecture was indeed remarkable especially for his rational methodology and objective approach. The architectural terms preserved in his writings may be useful for the study of Mughal and post-Mughal temples of north India.'

In 1847, the Archaeological Society of Delhi was formed. Though its life was short, its formation was an event of great importance in the annals of Indian archaeology.

The childhood of Indian archaeology was now over, giving way to the next stage in its development.

All these years, however, there was no systematic exploration of the antiquarian remains in the country. Alexander Cunningham published a paper in *The Journal of the Calcutta Society* in 1848, urging the Government of India to help in the preservation of ancient monuments of the country by appointing a suitable Government officer, possessing a thorough knowledge of the religion and arts of India, who should also be an epigraphist as well as a numismatist. Cunningham, who had come to India in 1831 in the service of the Government of India as a lieutenant of the Royal Engineers, had already made his mark as an archaeologist and numismatist.

For some years, the Government did not respond to Cunningham's appeal. But in 1860, after India had passed under the Crown, Lord Canning, the first Viceroy of India, decided at the instance of learned societies and scholars to establish an Archaeological Department of northern India for the preservation of innumerable ancient monuments. This was the first time that the Government unequivocally recognized its responsibility in regard to the monuments and remains of the country. Cunningham was appointed the first Archaeological Surveyor of India on a temporary basis. His duties, according

to the minutes of the Governor-General-in-Council, were 'to make an accurate description of such remains as most deserve notice, with the history of them so far as it is traceable and a record of the traditions that are retained regarding them'. No expenditure on the repairs and preservation of the monuments, however, was contemplated. From 1862 to 1865, Cunningham's activities were confined only within the North-Western Provinces (present-day Uttar Pradesh) and Bihar. He was paid a monthly salary of Rs. 450/- together with a field allowance of Rs. 250/- and, what is interesting, also a share in the antiquities to be discovered by him. It was on December 1, 1861, that the conduct of the operations decided on by the Government was formally entrusted to Cunningham.

On February 9, 1866, the post of Archaeological Surveyor was abolished by Lord Lawrence which led to a great agitation. Eminent scholars like James Fergusson advocated the revival of the Archaeological Department under the Government of India. In 1870, when Lord Mayo was Viceroy, the Government of India sanctioned the post of Director General of Archaeological Survey of India and offered it to Cunningham. He was also given three assistants — J.D.Beglar, A.C.L. Carlleyle and H.B.W. Garrick. Their work was confined to northern India and mainly to the collection of historical and geographical data and preparation of plans of important monuments. Between 1868 and 1869, Rajendra Lal Mitra carried out a survey-operation in Orissa which was later described in two monumental volumes, entitled *Antiquities of Orissa*.

A short time before 1870, a translation of the account of Hiuen Tsang's travels had appeared. Cunningham, therefore, spent a greater part of his time in identifying the holy places which the Chinese pilgrim had traversed. By 1865, he had covered the vast area stretching from Gaya in the east to the Indus in the north-west, and from Kalsi in the north to the Dhamnar Caves in the south, having carefully surveyed and reported on every monument of note in all the historical sites visited by him. The volume of work done by him is amazing. He published during his tenure of service twentyone volumes of the *Reports of the Archaeological Survey of India.* Of his numerous other publications, mention must be made of the first volume of the *Corpus Inscriptionum Indicarum* containing the *Inscriptions of Asoka* (1877), the *Ancient Geography of India, I,* Buddhist period (1871), the *Stupa of Bharhut* (1879) and the *Book of Indian Eras* (1884).

The achievements of Cunningham, perhaps the greatest name associated with Indian archaeology in the nineteenth century, may be summed up in his own words which were written before his retirement on October 1, 1885: 'I have identified the sites of many of the chief cities and most famous places of ancient India, such as the rock of Aornos, the city of Taxila, and the fortress of Sangala, all connected with the history of Alexander the Great. In India I have found the sites of the celebrated cities of Sankisa, Sravasti and Kausambi, all immediately connected with the history of Buddha. Amongst other discoveries, I may mention the Great Stupa of Bharhut on which most of the principal events of Buddha's life were sculptured and inscribed. I have found three dated inscriptions of King Asoka, and my assistants have brought to light a new pillar of Asoka, and a new text of his rock edicts in Bactrian characters in which the whole of the 12th edict, which is wanting in the Shahbazgarhi text, is complete.

'I have traced the Gupta style of architecture in the temples of the Gupta Kings at Tigowa, Bilsar, Bhitargaon, and Deogarh, and I have discovered new inscriptions of this powerful dynasty at Eran, Udayagiri and other places.'

In the meantime, a very significant and surprising discovery of a large number of neoliths in the valley of the Tosney river had been made by H.P. Le Mesurier of the East India Railway in January, 1860. A greater surprise was sprung when Robert Bruce Foote of the Geological Survey of India unearthed a palaeolith from a small ballast pit at Pallavaram to the south of Madras. Thus the history of man in India was pushed back to a date homotaxially equivalent almost to the earliest appearance of man in Europe. Hacket found in 1873 a quartzite hand-axe embedded in a cliff at Bhutra on the Narmada river in association with fossil mammalia. This find helped in determining the geological age of the Indian palaeolithic folk. The study of the prehistoric man in India began in this way.

The above-mentioned discoveries do not include those which Cunningham had made in the 1872-73 season at the proto-historic site at Harappa. The extensive ruins at Harappa had attracted his attention as early as 1853 and again in 1856, but he made his first excavations among them only seven years later. He could not recognize the importance of the relics found by him which discoveries in the later years have shown to be those of a great proto-historic civilization. The activities of the Survey were extended to western and southern India in 1874 and Dr. James Burgess was appointed the Archaeological Surveyor and reporter to the Government for these parts.

On January 17, 1883, at the suggestion of Cunningham, J.F. Fleet was appointed the Government Epigraphist and he edited the inscriptions of the Early Guptas and others connected with them. In Arabic and Persian epigraphy, Cunningham had found a competent and erudite collaborator in Henry Blochmann.

So far conservation had been outside the purview of the Director General. The Central Government, however, issued a circular dated February 13, 1873, assigning to the Local Governments the duty of the preservation of all buildings and monuments of historical and architectural interest. To prevent the despoiling of the archaeological remains by treasure-hunters, the Treasure Trove Act of 1878 was passed. Under the provisions of this Act, the Government was authorised to claim possession of any unearthed treasure exceeding ten rupees in value.

In January, 1881, Major H.H. Cole was appointed the Curator of Ancient Monuments in order to advise the Government of India and the Local Governments regarding the restoration and conservation of ancient monuments throughout India, the Local Governments being left to provide a permanent system of inspection and conservation. His duty was to prepare a classified list of ancient monuments of each province. He formulated a programme of conservation work for the future and produced under the title *Preservation of National Monuments in India* (Calcutta, 1881-85), ten folio volumes containing illustrations of some of the most famous monuments in his charge. With the abolition of the post after four years, the task of conservation of monuments again devolved on the Provincial Governments.

When Cunningham retired in 1885, the surveys of northern and southern India were amalgamated and placed under the charge of Dr. James Burgess whose duties as Director General were to look after conservation, survey and research. He assumed the duties of his office on March 25, 1886. The whole of British India was divided into five Circles, viz., Madras, Bombay, the Punjab (including Sind and Rajputana), the North-Western Provinces (now Uttar Pradesh, including Central India and the Central Provinces) and Bengal (including Assam). The Director General was to superintend the work

throughout the country with the assistance of three Surveyors and two Assistant Surveyors. An Epigraphist, Dr. E. Hultzsch, was also appointed in 1886 for editing the inscriptions in Sanskrit, Pali and Dravidian languages and for translating them. Burgess concentrated his attention mainly on the study of particular monuments in which he felt interested. Between 1874 and 1902, he produced thirty-two volumes in the *New Imperial Series;* of these, he himself contributed thirteen volumes and the rest were contributed by his associates. Archaeology being, according to him, 'but the history of art', his aim was 'to provide a pretty full illustration and history of ancient and medieval architecture down to the decline of the Muhammadan styles'.

Burgess insisted on a professional control of archaeological excavation and pressed for official measures that would illegalize any digging, except the excavations undertaken by or with the permission of the Archaeological Survey of India itself. He was also the first man who tried to rid India of robbers and art-thieves under the mask of antiquarians. As a result of his efforts in 1886, the Government issued two directives, one debarring public officers from disposing of, without official approval, antiquities found or acquired by them and the other, forbidding the digging up of ancient remains of any kind without the previous consent of the Archaeological Survey.

In October, 1888, Burgess started a quarterly publication, *Epigraphia Indica*, and this was his singular service in the field of epigraphy. His archaeological works include *The Rock Temples of Elephanta, Temples of Somnath, Junagadh and Girnar, The Rock Temples of Ajanta, The Cave Temples of India* (with J. Fergusson) and *Buddhist Art in India*.

Burgess produced twenty magnificent volumes of which seven formed part of the *Archaeological Survey of India, New Imperial Series*. In February, 1889, about a year and a half before his due date of retirement, he was encumbered with a huge mass of material sufficient to fill twelve large volumes in the *New Imperial Series* and one of *Epigraphia Indica*. In order to concentrate on the publication work, he withdrew from service on June 1, 1889.

With the retirement of Burgess in 1889, the Archaeological Survey had to face bleak and gloomy days. The post of Director General was kept in abeyance and Burma, Bengal, the Punjab and the Indian States were left without Surveyors. Such a sad state of affairs continued till 1898 when a reorganization of archaeological work in India was proposed.

In the new scheme that was sanctioned by the Secretary of State on May 18, 1899, provision was made for five Circles with an Archaeological Surveyor in charge of each. They were: Bombay with Sind and Berar; Madras and Coorg; the Punjab, Baluchistan and Ajmer; the North-Western Provinces and Central Provinces; Bengal and Assam. The Surveyors were placed under the control of the Local Governments, while the survey expenditure was charged to the imperial revenues except in the case of Madras, where it had been a provincial charge since 1890. Conservation work was the first and the main responsibility of the Circles and excavation was only a secondary objective. The Government announced that the limited funds should be spent primarily on the preservation of existing remains rather than on the exploration of what was unknown. A much more generous provision was, however, made for epigraphy. It was also decided to make the post of Epigraphist permanent so long as Dr. Hultzsch continued to hold it. But the Survey itself was left without any kind of leadership whatsoever. A good feature of the new scheme was that service in the Archaeological Survey was made pensionable for all those who had joined it before May 18, 1899.

Lord Curzon (1899-1905)

With the almost providential arrival on the scene of Lord Curzon of Kedleston, Governor-General of India from 1899 to 1905, a new era dawned for the history of Indian archaeology. His conception of archaeology was comprehensive; it included exploration, excavation, research, epigraphy, publication and preservation of monuments. Immediately on setting foot in India, he undertook a personal study of the operation of the existing system in each province of India. By September 1900, he was convinced of the utter futility of the system. The following are the extracts of a Minute recorded by him on September 23, 1900:

'Thus it has come about that owing to the absence of any central and duly qualified advising authority, not merely are beautiful and famous buildings crumbling to decay; but there is neither principle nor unity in conservation or repair, while from time to time horrors are still committed that make the student shudder and turn grey...

'The continuance of this state of affairs seems to me little short of a scandal. Were Germany the ruling power in India, I do not hesitate to say that she would be spending many lakhs a year on a task to what we have hitherto rather plumed ourselves on our generosity in devoting Rs. 61,000, raised only a little more than a year ago to 88,000...

'It is in the exploration and study of purely Indian remains, in the probing of the archaic mounds, in the excavation of old Indian cities and in the copying and reading of ancient inscriptions that a good deal of the ...... work of the archaeologists will in future lie. Epigraphy should not be set behind research any more than research should be set behind conservation. All are ordered parts of any scientific scheme of antiquarian work. I am not one of those who think that Government can afford to patronize the one and ignore the other. *It is in my judgement equally our duty to dig and discover, to classify, reproduce and describe, to copy and decipher and to cherish and conserve.'*

In his proposals submitted to the Secretary of State on December 20,1900, he made it clear that the Government of India could not divest itself of all responsibility for the preservation of the great ancient monuments, which, in the words of Lord Lytton, were 'for variety, extent, completeness and beauty unsurpassed, perhaps unequalled in the world' and that the Supreme Government and not the Provincial Governments would always be held in judgement of the civilized world primarily responsible for maintaining intact this great inheritance. It was unsafe to trust that the subordinate Governments would always be willing or able, under the pressing exigencies of provincial finance, to devote funds to it. A necessity was felt of someone at the head of the operations, who could not only assist local effort from an imperial standpoint with that advice and guidance which had been lacking since the days of Dr. James Burgess but could also maintain a continuous record of archaeological needs of the various Provinces and of the work undertaken to meet those needs.

The Secretary of State accepted these proposals tentatively for a term of five years and sanctioned, towards the end of 1901, the revival of the post of Director General, the incumbent of which was to be a trained explorer combining archaeological knowledge with engineering skill. It was his duty to exercise a general supervision over all the archaeological work in the country, whether it was that of excavation, of preservation or of repair, of epigraphy, or

of the registration and description of monuments and ancient remains. He was required to co-ordinate and bring up-to-date the local surveys and reports and to submit to the Government an annual report of his work. The Secretary of State also laid down that a lakh of rupees should be spent every year on archaeological work of special importance and magnitude.

John Marshall (1902-1928)

On the recommendation of the British Museum, John Marshall (knighted in 1914), who had already worked in Greece, South Turkey and Crete, was selected for filling the new post of Director General of the reconstituted Archaeological Survey of India. He reached India on February 22, 1902, at the age of twenty-six. He was as ardent and forceful a champion of archaeology as Lord Curzon. At the time of his arrival, there were only six archaeological officers including the Government Epigraphist. Through the intervention of Lord Curzon, another important reform had been introduced in 1901. So far there was no machinery for undertaking conservation of monuments in the Indian States. By an order of the Government dated June 4, 1901, the Indian States were put under one or another of the Surveyors, but with clear instructions not to do anything which might offend the rulers. A few States did take full advantage of that offer of assistance.

The most important function of the Director General was to ensure that the ancient monuments of the country were properly cared for, that they were not used for inappropriate or unseemly purposes, that repairs were executed when required, and that any restoration which might be attempted was conducted on artistic lines. He was to assist the regional Surveyors in ascertaining and formulating the special requirements of each province and to advise the Government of India as to the operations for which subsidies might be allotted from Imperial funds. He was to visit all the Circles in succession, succinctly reporting the general findings of his tour to the Government of each province visited and offering any suggestions that he might have to make in connection with the buildings he had inspected. He was, finally, to exercise professional control over all his colleagues and to maintain a continuous record of the needs of the various provinces and of the actions taken to meet them.

Conservation was still done through the medium of the Public Works Department and a little over three-quarters of the funds were provided by the Local Administrations and the rest by the Government of India.

An important step taken in 1903 which produced far-reaching results was the creation of state scholarships for the training of Indian students in archaeology. This policy of attracting promising young Indians to seek a career in the Archaeological Survey was one of the principal factors which led to archaeology being introduced into the curricula of the universities in India, and indirectly to the widespread enthusiasm for the subject which manifested itself among cultured Indians generally.

A very significant event took place in 1904. It was the enactment of the Ancient Monuments Preservation Act 'for the preservation of ancient monuments, for the exercise of control over excavation in certain places, and for the protection and acquisition in certain cases of ancient monuments and of objects of archaeological, historical or artistic interest'. It was this Act which, for the first time, invested the executive with sufficient legal authority with regard to monuments in private ownership. The Act was not quite satisfactory

in all respects; even then it was a great step forward and served more or less at the time the purpose for which it was introduced.

Marshall brought to bear on his task a scientific approach and an aesthetic understanding which had never been encountered before in the annals of Indian archaeology. Between 1902 and 1905, an astonishing volume of work concerning conservation, exploration and research was accomplished. The reorganization of the Survey was sanctioned in 1906, placing it on a permanent and extended basis and laying to rest once for all the phantom of the belief that a time would soon come when the Archaeological Survey might be disbanded and the work of conservation, if not complete, accomplished through the agency of the Public Works Department. The Survey was to consist of the Director General, the Government Epigraphist and six Circles, to cover the whole of India (including Burma but excluding Mysore, which had its own organisation). Dr. Sten Konow was appointed the Government Epigraphist for India and he was attached to the Director General to assist him in matters of epigraphy in north India.

Lord Curzon worked hard in spite of his ill-health, physical pain and domestic sorrow and characteristically brought the whole administrative machinery to a pitch of efficiency. He left India later in 1906 and the Archaeological Survey of India lost not only its best friend and most powerful patron but also its *de facto* founder. Till the end of his life, however, he never ceased to interest himself in its fortunes and, when necessary, to champion its cause.

The responsibility of progressively building upon the foundations laid by Lord Curzon fell on the shoulders of John Marshall, the young Director General, who held the post with distinction for twenty-three years after the departure of Lord Curzon. This period forms one of the most fascinating and fruitful epochs in the annals of Indian archaeology.

In 1912, an attempt was made to decentralise the Archaeological Survey by abolishing the post of Director General and replacing it by a Professor of Archaeology. But due to the storm of protest raised in India as well as abroad, the contemplated decentralization did not take place. It was finally declared that it would not be prudent to abolish the office of Director General, and the Government created two scholarships for the training of Sanskrit scholars in addition to the two existing since 1903.

World War I broke out in 1914 and much of the archaeological work had necessarily to be suspended. 'Not only were our funds drastically reduced,' writes John Marshall, 'but several of our staff were on military service, and the army had also claimed many of our trained workmen, among them some 800 out of the 1,200 diggers whom I had been employing at Taxila — a fine record in recruiting and one of which the countryside had reason to be proud.' Peace returned in 1918. The Devolution Rules of 1921, giving effect to the classification of subjects as contemplated in the Government of India Act, 1919, laid down archaeology as a Central subject. In 1921, came a further reorganization of the Survey and six new posts were added to the cadre. Also there was a substantial increase in salaries. But before all the posts could be filled, Lord Inchape's Committee proposed 90 per cent reduction in the funds of the Survey, which meant its virtual abolition. The timely intervention of the Secretary of State and the Viceroy, Lord Reading, saved the Archaeological Survey from annihilation and it escaped with a cut of 22.5 per cent.

The Survey's affairs came to normal and, in 1926, a sum of 2½ lakh rupees was provided in the supplementary estimates for that year for exploration and

sanction was given to the temporary appointment of four additional officers including a second Deputy Director General to help exclusively in that branch of work. A separate Exploration Branch was thus constituted.

In 1930, an Assistant Superintendent and a small staff were appointed to help the honorary Government Epigraphist, Ghulam Yazdani.

Marshall's 'Note on the operations and future conduct of the Archaeological Survey', dated April 6, 1903, shows that within a year, he had formulated definite principles of excavation, conservation and museums. These principles were generally accepted by the Government in its Resolution dated July 7, 1903. He realized that the prime need at that time was conservation and excavation.

About conservation, Marshall laid down that: (a) hypothetical restorations were unwarranted, unless they were essential for the stability of a building; (b) every original member of a building should be preserved intact, and demolition and reconstruction should be undertaken only if the structure could not be otherwise maintained; (c) restoration of carved stone, carved wood or plaster-moulding should be undertaken only if artisans were able to attain the excellence of the old; and (d) in no case should mythological or other scenes be re-carved. These principles found concrete expression in a vast multiplicity of conservation programmes, which were undertaken and brought to a successful conclusion during Marshall's regime. These are the very principles which still govern the conservation works of the Archaeological Survey.

Before Marshall, archaeology had simply meant a quest of *objets d'art* or religious relics, a search for the objects which satisfied the eyes and one's aesthetic sense. But Marshall wanted the science, first and foremost, to recapture the total culture of India in the past ages, with their cities and streets, their furniture and tools, their arms and weapons, their ornaments and jewels, their seals and coins and their laws and customs.

Nalanda and Vaishali, Pataliputra and Bhita, the three cities of Taxila, and, crowning all, the protohistoric towns of Mohen-jo-daro and Harappa are the ancient sites which were unearthed during Marshall's regime. According to Sourindranath Roy: 'The period during which he guided the destiny of Indian archaeology was so deeply tinged by his colourful, dynamic and all-pervasive personality that even today he stands as the very symbol of that period, just as Cunningham impersonates for us an earlier age in archaeological history.'

A few of the well-known Buddhist sites to which the Survey's attention was at first directed were Sarnath and Kasia, Sravasti and Rajgir, Vaishali and Sanchi, Takht-i-Bahi and Shahji-ki-Dheri. The reason for undertaking excavation first at these sites was that the Survey at that time was better informed — thanks to the Chinese pilgrims and the researches of earlier archaeologists —about these sites generally. Another reason was that spectacular finds expected at Buddhist sites were indispensable for securing financial support and public interest, which made it very easy for the Survey to extend enquiries to other fields of Archaeology.

At the ancient city-sites, Marshall expected discoveries of a more illuminating order. Bhita, Kumrahar (ancient Pataliputra) and Bulandibagh received his attention first.

It was, however, at Taxila, where his campaign extended to more than twenty years, that he got the most comprehensive and instructive results; the entire conception of urban life in north-west India from the seventh century B.C. to the fifth century A.D. was thereby revolutionized.

Simultaneously with archaeological excavations within the country, arrangements were made for sending exploratory missions to India's borderlands and beyond with a view to unravelling the history of India's contacts with not only Central Asia but also with territories culturally affiliated to Tibet and China. Sir Aurel Stein undertook three successive archaeological-cum-geographical expeditions in Central Asia and covered the area comprising the Oxus region in the west, China in the east, the big ramparts of Tien-Shan, 'the Celestial Mountains' in the north and the snowy K'un-lun ranges in the south. The expeditions were undertaken, respectively, in 1900-01, 1906-08 and 1913-16, the first of them outside the auspices of the Survey, and extended over a total of seven years. This area, which preserves the relics of the ancient cultures, has played a significant role in the expansion of Indian cultural influences.

In the first expedition (1900-01), Stein had unearthed a most interesting settlement buried at Niya. In the course of his second expedition (1906-08), Stein re-examined the Niya Oasis and gathered a rich harvest of Kharoshthi documents. After visiting Loulan and Miran, he went to the sacred Buddhist grottoes known as the 'Halls of the Thousand Buddhas' at Tun-huang. The hundreds of grottoes revealed a profusion of beautiful tempera paintings, showing close affinity in style and composition to the Buddhist pictorial art of India which was transplanted to the Tarim basin. There were equally abundant sculptural remains in the grottoes. Among plentiful remains in Indian Brahmi, there were texts, mainly Buddhist, in Sanskrit as well as in two Central Asian languages — viz., Khotanese or 'Saka' and Kuchean or 'Tokhari'.

While searching for the Yangi-dawan pass by which the old route — once used in times of emergency for direct communication from Khotan to Ladakh — is believed to have crossed the K'un-lun range, Sir Aurel Stein ascended a steep and much-crevassed glacier. He writes, 'Just at the completion of this last exploratory task, my feet were severely injured by frost bite. In the end, it cost me the loss of my right toe. In that crippled state, I had to have myself carried across the Karakoram passes to Ladakh and thence to Srinagar.'

The third expedition (1913-16) conducted by Stein enabled him to recover the remains of wall paintings from one of the ruined Buddhist shrines in Miran, to re-explore Tun-huang which had earlier yielded a rich crop of archaeological finds, to reach the ruined town of Kharakhoto, the identity of which with Marco Polo's 'City of Etzina' was then definitely established, where Buddhist manuscripts and block-prints on paper, both in Tibetan and the little known Tangut language, besides miscellaneous records in Chinese, Uigur and Tangut scripts, block-printed pictures, stucco relievos, etc., were brought to light and finally to attempt the clearance of a vast ancient burial-ground in Turfan from which he recovered abundant archaeological material including a number of textiles of manifestly Persian design and coins.

The mural paintings safely brought from afar, across deserts and high ranges, by Stein are displayed at present in the Central Asian Gallery of the National Museum in New Delhi; the gallery is located in the building of the Archaeological Survey of India at Janpath adjoining the National Museum.

Stein himself has fully recorded the results of all his Central Asian expeditions in the eleven volumes of *Ancient Khotan* (1907), *Serindia* (1921) and *Innermost Asia* (1928).

The beginning of this century saw a great enthusiasm on the part of eminent scholars like Aurel Stein, Paul Pelliot, A. Grünwedel, Le Coq and Petrovsky in taking adventurous expeditions to Central Asia in order to unfold

the cultural and religious life of this region. These scholars wrote detailed reports on their expeditions and experiences besides giving an exhaustive description of the art objects brought by them, which are now housed in different museums of the world, viz., National Museum, New Delhi, the Central Asian Antiquities Department which is headed by Dr. Chhaya Haesner, British Museum, London, Musee Guimet, Paris, Museum of Indian Art, Berlin, Hermitage Museum, Leningrad, National Museum, Tokyo, and National Museum, Seoul, etc.

In *Buddhist Images and Narratives* (New Delhi-1986), Amarendra Nath has discussed some of the antiquities preserved in the National Museum, New Delhi, which had been brought by Sir Aurel Stein from Khara Khoto, the black town in Edsin-Gol delta in the southern-most region of inner Mongolia. The site was noticed in 1908 by Col. Kozlov, a Russian explorer. The antiquities would fall in two categories: (i) Tangut period (A.D. 1036-1227) and (ii) Post-Tangut period.

Study of Central Asian history and art began with the pioneers mentioned above and it continued, though slowly. Around mid-seventies and beginning of eighties, a new wave of Central Asian Studies began. Important exhibitions on Silk Route were held in Paris, Los Angeles and New York and also in Japan. Well-produced and informative catalogues in connection with these exhibitions were brought out. The Unesco has been taking keen interest in the subject and has also been encouraging various projects for a detailed study of Central Asia. Chinese archaeologists are taking keen interest in reviving the excavations along the ancient Silk Roads and unveiling a fascinating chapter on Chinese Central Asian art. Russian scholars have been ceaselessly engaged in excavating the Central Asian sites in Soviet Central Asia and have been promoting research in the field. Individual scholars from all over the world have also been taking a special interest in the study of various aspects of Central Asian history, art and archaeology.

Discovery of the Indus Civilization

The early decades of this century are of great importance in the history of Indian archaeology both in the field of research and in that of archaeological organization throughout the country. No systematic attempt had till then been made to explore the valleys of the great rivers which are referred to in early Indian literature. Hitherto, the aim and attempt had been either to locate ancient habitations along the trade routes or to identify sites mentioned primarily in Buddhist literature. It is interesting to note that Cunningham, who had visited the site of Harappa in 1852-53, could not visualize its importance. With the discovery of Mohen-jo-daro in 1922 by Rakhal Das Banerji, therefore, an entirely unknown civilization was brought to light. Excavations were started at Harappa by Daya Ram Sahni in 1921-22 and at Mohen-jo-daro by Sir John Marshall in 1922.

These excavations revolutionized the whole conception of Indian civilization and culture. The discoveries were of such monumental importance that Marshall wrote in 1924:

'Hitherto India has almost universally been regarded as one of the younger countries of the world. Apart from palaeolithic and neolithic implements and such rude primitive remains as the Cyclopean walls of Rajagriha, no monuments of note were known to exist of an earlier date than third century B.C., when Greece had already passed her zenith and when the mighty empires of Mesopotamia and Egypt had been all but forgotten. Now, at a single bound, we have taken back our knowledge of Indian civilization some 3,000 years earlier and have established the fact that in the third millennium before Christ, and even before that, the peoples of the Punjab and Sind were living in well-built cities and were in possession of a relatively mature culture with a high standard of art and craftsmanship and a developed system of pictographic writing.'

It is these epoch-making discoveries which enabled Marshall to persuade the Government to make a more liberal grant for excavation. At the huge site of Mohen-jo-daro, where the remains are spread over an area of 240 acres, extensive excavations started in the summer of 1922 by Marshall and his colleagues in the Archaeological Survey of India have continued intermittently up to the present day, and archaeologists of fame like Mackay (1927-31), Sir Mortimer Wheeler (1950) and George F. Dales (1964-65) uncovered a vast area of structural remains and reaped a rare harvest of cultural wealth, giving invaluable information concerning the origin, life-history and decline of the city. At Harappa the excavations continued up to 1935. Regular excavations of important archaeological sites were undertaken for the first time during the regime of Marshall.

The results of the 1922-27 excavations are embodied in Marshall's three monumental volumes, *Mohen-jo-daro and the Indus Civilization* (London, 1931) and those by Mackay are included in *Further Excavations at Mohen-jo-daro* (Delhi, 1938).

An international symposium on Mohen-jo-daro to mark the 50th anniversary of its excavations was held at Mohen-jo-daro itself on February 23, 1973.

Subsequent to the discovery and excavation of sites of the Harappan culture, systematic surveys were taken up in areas likely to yield sites belonging to this culture. In Sind itself, K.N. Dikshit discovered two new sites of the Harappan culture in 1925. These were Lohum-jo-daro in Larkana and Limujune-jo in Upper Sind. N.G. Majumdar made a trial dig in 1926 at Jhukar which yielded two levels of a culture akin to the Harappan and yet another overlying it which was characterized by a buff ware with black and red decoration and stone and clay stamp-seals, and was definitely post-Harappan.

In Baluchistan, Sir Aurel Stein undertook a survey between 1926 and 1928 and located a number of chalcolithic sites representing different stages of development, some of which were pre-Harappan in character, while others yielded cultures overlapping or post-dating them. Rana Ghundai, Periano Ghundai, Kulli, Mehi, Nundara, Sukhtagendor and Shahi Tump were some of the important sites discovered. A radical expansion in the existing knowledge of the nature and extent of the proto-historic cultures in the north and north-west of India was brought about as a result of these reconnaissances, which also posed new archaeological problems.

Under Marshall's leadership, archaeological activities were stimulated in the Indian States also.

The publication programme of the Survey was thoroughly reorganized during the regime of Marshall. *The New Imperial Series,* started by James Burgess

in 1874, was continued and efforts were made for enriching it with further scholarly contributions. A new series, *Annual Reports of the Director General of Archaeology,* was started. In 1919, this series was supplemented by yet another, *The Memoirs of the Archaeological Survey of India.* The *Corpus Inscriptionum Indicarum* was also revived.

Marshall set up, under the direct control of the Survey, a large number of museums including those at Agra, New Delhi, Delhi Fort, Lahore Fort, Mandalay and at the excavated sites of Taxila, Mohen-jo-daro, Harappa, Sarnath, Nalanda and Pagan. The museum movement spread quickly and new museums were founded at Bijapur and Baripada, Chamba and Ajmer, Gwalior and Khajuraho, Sanchi and Dhaka. Presently there are thirty-one site-museums under the control of the Archaeological Survey of India alone. In all, there are about 400 museums in India, most of them having a traditional pattern, but they have not been able to occupy their rightful place in school and college curricula. Seeing is totally different from reading. For people's involvement a museum should not merely attract visitors with the avowed purpose of educating them but also make them involved in its various activities. How immense is the potential of the contribution of museums and monuments to society is evident from the history of the museum movement in some of the advanced countries of the world.

Marshall built up in the Survey an excellent reference library, which is known as the Central Archaeological Library and contains today about one lakh volumes and an equally rich photo collection, which has also now about one lakh negatives of nearly all the chief monuments of note in India.

In the midst of all these activities, Marshall relinquished on September 6, 1928, the charge of his office, which he had held for over twenty-six years. He was placed on special duty for writing a series of monographs on Mohen-jo-daro, Harappa, Taxila, Sanchi, Mandu, Delhi, Agra and Multan. He was also to supervise and direct the operations at Taxila and to coordinate the results of the explorations of the Indus Valley sites and other sites allied to them. Though he was due for retirement on March 19, 1931, he was retained till March 15, 1934, when he finally left for England. He died in 1958 at the age of 82.

Marshall amply justified the choice of Lord Curzon by putting Indian archaeology on a stable footing and by building up the biggest and most complex apparatus for archaeological investigations in the world, which has undergone very little change since his time. His scholarly works include *Conservation Manual* (Calcutta, 1923), *Mohen-jo-daro and the Indus Civilization* in 3 volumes (London, 1931), *Monuments of Sanchi* in 2 volumes (Delhi, 1940), *Taxila* in 3 volumes (Cambridge, 1951) and *Buddhist Art of Gandhara* (London, 1952).

Marshall has recently been charged with committing a grave error in archaeological strategy for not making any attempt to tackle different types of sites in the country which could give regional culture-indices and for not attempting investigations into Stone Age India, but his strategy was justified by its success. These shortcomings notwithstanding, Marshall did leave a permanent impress of his work.

Of late, the inadequacy of the excavation-technique of Marshall and his associates has also been commented upon. European archaeology had by then, no doubt, fully recognised the principle and importance of stratified excavation and put it into extensive practice. But the workers in India had not maintained contacts with their foreign counterparts.

Marshall will, however, always be remembered as the man, who, archaeologically speaking, left India three thousand years older than he had found her.

Nothing that the British Government had done in India, neither its railways nor its irrigation, nor its hospitals, nor its system of justice, appealed to the popular imagination as much as the care it had bestowed on the archaeological remains.

After Marshall (1928-1944)

The mantle of Sir John Marshall fell on an enthusiastic band of archaeologists, which included H. Hargreaves, Daya Ram Sahni, K.N. Dikshit, N.G. Majumdar and M.S. Vats.

Hargreaves was the first to be called upon to fill the gap left by Marshall's retirement; he held the charge of Director General from October 8, 1928 to July 29, 1931.

Rai Bahadur Daya Ram Sahni, who succeeded Hargreaves, was the first Indian to rise to the supreme position of Director General, Archaeological Survey of India. When Sahni retired, the office devolved on J.F. Blakiston on June 1, 1935. On March 21, 1937, he handed over the charge to Rao Bahadur K.N. Dikshit, who proved himself to be a very competent Director General. He retired in 1944.

The period following Hargreaves' retirement was not an easy one and with the world depression in 1931, the axe of the Retrenchment Committee again fell on the Archaeological Survey. A cut of 33 per cent in the budget of the Survey was imposed and practically all explorations and excavations came to a standstill. The work of conservation was also reduced to the minimum. Even for its day-to-day existence, the Survey had to struggle.

Changes came in 1935 following the constitutional reforms brought about by the Government of India Act of the year. The Burma Circle was detached from the Archaeological Survey of India and its activities were reorganized on an independent basis. 'Ancient and historical monuments,' including 'archaeological sites and remains' were made exclusively a federal subject, with the result that in 1937 the Central Government was able to take over all powers which were till then vested in the Provinces under the Ancient Monuments Preservation Act in regard to the care and protection of ancient monuments and relics.

In the section dealing with excavation in the Ancient Monuments Preservation Act, an amendment was effected in 1932 so as to enable interested institutions and organizations, including foreign missions, to undertake excavations at protected sites subject to certain rules and conditions which were framed by the Government in this regard. The American School of Indian and Iranian Studies and the Boston Museum of Fine Arts jointly sent a mission to India in 1935 to carry out excavations in the Chanhu-daro area in Sind, which led to most interesting results.

In 1935, the Yale and Cambridge Universities sent a geological-cum-prehistoric expedition to India under the leadership of Helmut De Terra. The expedition did valuable work in India, particularly in the north-west.

In 1937, the financial position of the Survey was gradually improving. Dikshit paid attention to an exploration of those parts of Sind which had been left uncovered during the previous surveys. Between 1929 and 1931, N.G. Majumdar had discovered many new sites in Sind such as Chanhu-daro, Ali Murad, Amri, Lohri and Pandi Wahi. In 1938, an expedition to pursue further enquiries in respect of the dispersion of chalcolithic cultures in the country was organized to carry out further exploration in Sind. Unfortunately, Majumdar,

the leader of this expedition, met with a tragic end at the hands of bandits, and the other members of the party also received injuries. The period also witnessed revival of interest in the prehistoric Stone Age cultures in India.

In 1938, the Government decided to invite a foreign expert to report on matters relating to future excavations and the choice fell on Sir Leonard Woolley, the famous excavator of the Royal Graves of Ur and many other sites in Western Asia. The terms of reference were to advise on: (1) the most promising sites or areas for excavation; (2) the best methods and agencies for achieving speedy and fruitful development of exploration activities in general, considering in this regard not only the Government but also the non-official agencies such as universities, learned societies, etc.; (3) the best method of training and selecting officers for exploration work; and (4) any general points bearing on the field of exploration and excavation. Sir Leonard stayed in India from November 6, 1938 to February 11, 1939 and visited forty-five places. His report was virtually a wholesale condemnation of the activities of the Department except in regard to conservation, for which he was all praise, and epigraphy, about which he had nothing to say. He recorded that: 'On almost every site I visited, there was evidence of the work having been done in an amateur fashion by men anxious to do well but not sufficiently trained and experienced to know what good work is'. He deprecated the tendency of not attempting to dig down to the lower levels by removing structures of the upper ones. He wanted that greater incentive should be held out to encourage foreign and Indian institutions to take part in excavation. 'Some parts of Woolley's report were,' writes A. Ghosh, 'definitely based on hurried observation and an imperfect appreciation of Indian requirements, and the remarks about the quality of excavations may be regarded as of too sweeping a nature.' But the severe criticism of the Department by Woolley was not altogether baseless, for the fact was that Indian archaeologists had not kept in touch with the techniques of excavation improved in Europe and America, with the result that the methods followed by them were antiquated. Hardly had any attempt been made to establish sequences of cultures by deep excavations, and there was no systematic plan about the choices of sites to be excavated, so that the archaeology of large parts of the country had remained in the dark.

The recommendations of Woolley were not immediately followed up by the Government except in regard to undertaking an excavation at Ramnagar (Ahichchhatra) in District Bareilly, Uttar Pradesh, where he had recommended that the excavation should be on a large scale and should employ all those officers of the Department whose training in field work was desirable, the direction being in the hands of a really competent archaeologist. Dikshit undertook a large-scale excavation there during the years 1940-44.

The effects of World War II were felt during the last years of Dikshit's Director-Generalship; even the printing of all archaeological, including epigraphical, publications was stopped.

From Wheeler to the Present Day (1944-1991)

In 1944, Dr. Robert Eric Mortimer Wheeler, a British archaeologist, succeeded Rao Bahadur K.N. Dikshit as Director General on a contract of four years. A new era was ushered in. The brief period of his stewardship was one of the most eventful in the annals of Indian archaeology. He brought about a

series of significant changes not only in the organization and general planning of archaeological work but also in the very tactics followed in the conduct of investigations. By February, 1945, he had reorganized the Survey in several directions. Conservation was centralized throughout India; the Provincial Public Works Departments, which acted as agents of the Survey in all Circles except the Northern and the Frontier, were relieved of this work. An Executive Engineer was appointed at the headquarters to cope with the increased work. The post of a Prehistorian was included in the reorganization scheme. Wheeler's scheme provided for the establishment of a Museums Branch in the Survey headed by an Assistant Superintendent. New posts of an Assistant Archaeological Chemist and an Assistant Superintendent for Muslim Epigraphy were also created under the scheme. Towards the close of 1945, the post of Joint Director General of Archaeology was created to cope with the increased work at the headquarters. A Superintendent for Publications was appointed in 1946. Wheeler also started the publication of *Ancient India,* the Bulletin of the Archaeological Survey of India, in 1946. A new Circle, called the South-eastern Circle, was carved out in 1947. Posts of a Garden Superintendent and an Assistant Garden Superintendent were sanctioned in 1947.

In 1945, a Central Advisory Board of Archaeology was established; later on annual meetings of the Board coincided with a symposium on the results of the work of the preceding year. This body has shown its usefulness in checking the progress of research programmes and directing attention to current problems.

In 1947, The Antiquities (Export Control) Act was enacted to ensure that the country was not denuded of her antiquarian treasures.

Dr. Vasudeva Sharan Agrawala, a well known Indologist, as Superintendent of the Archaeological Survey of India, was in charge of building up the collection of the National Museum, New Delhi, which had still to come up. He got the Government to associate with him in that important task three famous experts on museums and antiquities — Rai Krishnadasa, Dr. Moti Chandra and Karl J. Khandalavala. Wheeler and his successor Dr. N.P. Chakravarti vigorously pursued the matter of the establishment of a National Museum of India till it was inaugurated on August 15, 1949. The collections of this museum range from the prehistoric times to those of the last century.

The Partition of India in 1947 led to certain interesting archaeological results, aptly summed up by Wheeler (*Ancient India,* No. 4, 1947-48, page 1) in these words:

'Pakistan is found to include almost the whole of the known extent of the earliest civilization of India, that of the Indus Valley. It includes also Gandhara and the homeland, therefore, of a phase of art which spread its influence as far south as remote Amaravati; and with Gandhara, Charsada, once Gandhara's metropolis and now one of the unexplored key-sites of Asia; likewise Taxila, Gandhara's provincial capital, ancient meeting-place of east and west; and a host of Buddhist *stupas* and monasteries, of which Takht-i-Bahi and the neighbouring Sahri-Bahlol are merely notable examples. Pakistan has no reason to complain of its archaeology, except in one anomalous respect. Almost all the Mohammedan monuments of the first importance remain in India. The battered Moghul fort and the remains of Jahangir's Tomb at Lahore, even the two beautiful tiled Persian mosques at Tatta in Sind, are a poor sample of the achievement which also produced the forts and mosques and tombs of Delhi and Agra, Akbar's royal city of Fatehpur Sikri, the tombs of Sasaram, the mosques and tombs of Ahmedabad, Jaunpur, Bijapur, Pandua

— the list need not be extended. All these, which are still a part of India, will by India be worthily cherished as an integral portion of her cultural heritage.'

A revolution was brought about in Indian archaeology by the dynamic personality of Sir Mortimer Wheeler, the results of which are still being experienced. Basically, the most important innovations introduced by Wheeler were the reorganization of the Excavations Branch and his insistence that research was henceforward to be linked with intelligent planning. He set out the need for organised and co-ordinated planning, and for clear-cut objectives for research. This involved, among other things, the introduction of techniques of excavating a site keeping in view the stratigraphy. The need to bring in scientific and specialized techniques to broaden the scope of India's archaeology was envisaged by him. A body of younger field archaeologists to execute the work was trained by him in the Indian School of Field Archaeology which started functioning at Taxila on October 1, 1944. The latest techniques of excavation were taught in the School. By and large, the result of this new planning has been the extension of our knowledge about the entire prehistoric cultures of the subcontinent.

On April 30, 1948, Dr. Wheeler handed over charge of his office to Dr. N.P. Chakravarti.

In 1948, on an invitation by the Government of Indonesia, two officers of the Department, K.R. Srinivasan and C. Sivaramamurti, visited that country. The former prepared a detailed report on the condition of the Borobudur monument and suggested measures of conservation, while the latter studied the art of the great monument, suggesting new identification and interpretation of certain sculptures and correlating them with ancient dresses and customs of the land.

In 1949, the State of Baroda merged into the Indian Union and its archaeology was taken over by the Government of India.

On January 26, 1950, the Constitution of India was promulgated. It ordained the following allocation of functions relating to archaeology between the Union and the State Governments:

(1) Union: ancient and historical monuments and archaeological sites and remains, declared by Parliament by law to be of national importance.
(2) States: ancient and historical monuments other than those declared by Parliament to be of national importance.
(3) Besides these two categories, both the Union and the States would have concurrent jurisdiction over archaeological sites and remains other than those declared by Parliament by law to be of national importance.

On June 30, 1950, Dr. Chakravarti handed over charge of his office to Madho Sarup Vats; he, however, continued in the Department for a couple of years more as an Adviser on Archaeology. It may be recalled here that Vats had carried out excavations at Harappa.

In 1951, in fulfilment of the provisions of the Constitution, Parliament passed the Ancient and Historical Monuments and Archaeological Sites and Remains (Declaration of National Importance) Act.

With the exception of the two known Harappan sites of Ropar and Bara, all other Harappan sites had gone to Pakistan. A. Ghosh, therefore, explored during 1950-53 the valleys of the dried up Sarasvati (Ghaggar) and its tributary, the Drishadvati, in Ganganagar District in north Rajasthan, where he discovered a large number of Harappan sites. He also noticed on a few sites,

particularly on the Drishadvati, non-Harappan pottery, which evidently antedated the Painted Grey Ware in the region.

A. Ghosh observes: '...in the Sarasvati region, while the Harappan sites, during the lifetime of which the river was no doubt alive, are located on the banks of the river, the settlements of the succeeding Painted Grey Ware people are sometimes situated right in the river bed, indicating that they appeared on the scene when the river had dried up, which would contribute to the spread of arid conditions.'

On March 2, 1953, Vats retired and A. Ghosh took over as Director General of Archaeology in India. On him fell the task of translating into reality the schemes prepared by his predecessors.

The archaeological integration of India was completed, and the Department of Archaeology spread its organization all over the country. Two new Circles were also carved out.

A. Ghosh, writing in *Ancient India,* No. 9, 1953 (Notes, p. 2, Special Jubilee Number), says:

'In the sphere of preservation of monuments, while the Survey has held the monopoly in regard to those over which it has assumed control, noteworthy were the efforts of some of the former Indian States in saving from ruin the monuments in their charge. If Sanchi has become symbolic of early Buddhist art, if the names of Ajanta and Ellora conjure up before us visions of spiritual beauty, if the temples of Belur, Halebid and Somnathpur still stand as a testimony to the grandeur that was Hoysala architecture, if the fabric of the monuments of Mandu still holds together to bespeak the ancient glory of the 'city of joy', the credit goes to the enlightened interest taken in them by the respective States, which treasured them as it were as a trust, to be made over this year to the nation as "monuments of national importance".

No review of the archaeological history of the country will be complete without a reference to the archaeological work in the Indian States prior to their merger in the Indian Union. Mysore had its own Department since 1900, to be followed shortly afterwards by Kashmir, Pudukkottai and Mayurbhanj. Hyderabad, Gwalior, Travancore, Cochin, Bhopal, Baroda and Jaipur joined the list later on. Some of these Departments had done valuable work in protecting and preserving the monuments in their charge and also undertaken excavations. A few other States were helped by the Central Government with finance and advice.

Following the merger of Indian princely States with the Indian Union and the taking over of their important monuments by the Central Government as monuments of national importance, the majority of the staff of the State Departments was absorbed by the Central Department in 1953. In 1959, the staff and important monuments of Jammu and Kashmir were similarly taken over and the archaeological integration of India was complete.

In May, 1956, Sir Mortimer Wheeler commented as follows: 'Today, no part of the world is better served in archaeological matters than in the Republic of India.'

In 1958, the Parliament of India passed the Ancient Monuments and Archaeological Sites and Remains Act 'to provide for the preservation of ancient and historical monuments and archaeological sites and remains of national importance, for the regulation of archaeological excavations and for the protection of sculptures, carvings and other like objects'.

The vast expansion of archaeological activities since Independence naturally brought in its wake many problems, one of them being that of getting

trained personnel. The Government of India, therefore, organized systematic and comprehensive training in various branches of Archaeology, so that fully trained personnel might regularly be available to meet the needs of the Central and State Departments and museums as also of the universities and research institutes. On October 15, 1959, a school known as the School of Archaeology was set up at New Delhi under the auspices of the Archaeological Survey of India.

The keynote of the course at the school was practical training: intensive in the case of exploration, excavation and preservation of monuments, and sufficient, to the extent necessary, for a field-archaeologist, in the case of photography, drawing, surveying, modelling, museum-methods, chemical preservation of monuments and antiquities and publication, including block-making and printing. On the theoretical side, besides art, architecture, palaeography and numismatics are taught prehistory and protohistoric and early historical archaeology, supplemented by elementary geology, anthropology, environmental archaeology and antiquarian laws. An all-India tour lasting for more than a month is also arranged for students and they are taken around most of the important monuments, sites and museums in the country. At the end of the course, an examination is held and a post-graduate diploma in Archaeology is awarded to successful candidates. The School is proving itself to be a valuable organization for the training of archaeologists not only for India but also for the neighbouring countries.

From 1st April, 1985, the School of Archaeology was elevated to the status of Institute of Archaeology. The duration of the post-graduate diploma course was increased to two years from the 1986-88 session to equip the students in a much better way in the field of archaeology and allied disciplines. The Institute has also introduced a fellowship scheme for different branches of archaeology. Besides, arrangements have been made to provide necessary refresher courses and training to in-service officers and technical personnel of the Survey and the State Departments of Archaeology.

In the field of excavation and exploration, the period witnessed an all-round activity. Between 1950 and 1956, chalcolithic levels were excavated by the Deccan College Post-graduate and Research Institute at Nasik on the Godavari, at Jorwe and at Nevasa, again on the Pravara; by the University of Saugor at Tripuri in the Narmada Valley; and by the Union Department of Archaeology at Bahal on the Girna, a feeder of the Tapi, at Maski in the Krishna-Tungabhadra basin, at Prakash on the Tapi and at Nagda on the Chambal.

In 1957, Ghosh felt that a stage of development had been reached when large-scale *horizontal excavations* should be initiated at a few selected sites and with specified objectives in view. Even at a site with established potentialities, horizontal excavation should be preceded by a vertical excavation. He wrote that early man would not reveal himself to us in his fulness without horizontal excavation.

Writing in the *Personality of India* (2nd edition, Baroda, 1958, p. VIII, by Bendapudi Subbarao), Wheeler said in 1958 that Indian archaeology, having undergone the first stage—one of limited knowledge and restricted inference — is at the present time passing through the difficult record stage, when there is an accumulation of scraps of evidence tending to constitute an incoherent heap. The third stage will be reached when this heap has sufficiently grown and matured and has taken an assured place in the landscape. 'A firm comparative stratigraphy,' writes A. Ghosh, 'can be produced only when the third stage is reached.'

Wheeler had envisaged that a condition for the advancement of the study of the great heritage of India was the widespread extension of archaeological research from the confines of the Government Department into the liberal activities of the universities and learned societies of India. By 1960, this condition had been fulfilled to a considerable extent within a remarkably short period. Some universities took up archaeological work as one of their normal functions and achieved creditable success. The Archaeological Survey of India has also been giving them grants-in-aid.

A. Ghosh started the publication of *Indian Archaeology—A Review* and the first issue was published for the years 1953-54. It is the most important journal which provides information about the archaeological activities in India during each year. This publication, like *Ancient India,* the Bulletin of the Archaeological Survey of India, is considered an authentic and first-rate scholarly publication and an important tool of research.

It is a happy development that many institutions, including universities and State Governments, have come forward to undertake archaeological work in the country. The credit of being the first such institution goes to the University of Calcutta, which excavated at Bangarh in Bengal as early as 1937-41.

Under the pioneering leadership of Dr. H.D. Sankalia of the Deccan College Post-graduate and Research Institute, Pune, a large number of excavations of chalcolithic sites in Maharashtra, Madhya Pradesh and Rajasthan were undertaken. Valuable work has been done by the Kashi Prasad Jayaswal Research Institute, Patna, and the universities of Allahabad, Aligarh, Banaras, Patna, Calcutta, Gorakhpur, Kurukshetra, Dharwar, Madras, Mysore, Saugor, Vadodara, etc. These universities, besides teaching archaeology to students, also excavated a large number of sites ranging from prehistoric times to the medieval period. The number of universities offering courses in archaeology is over thirty but most of them do not undertake field work and confine their teaching to theory alone. B.K. Thapar writes: 'Admittedly in the field of archaeology, tuition is useless without experience.'

This period also witnessed a renewed activity in the field of excavation and very active participation by the various State Governments, which was earlier restricted only to a few princely States like Baroda and Hyderabad.

The overall picture which ultimately emerged during this period is one of buzzing activity in the field of excavation and exploration by the Archaeological Survey of India and the other learned institutions. The year-after-year deliberations and exhibitions at the time of the meetings of the Central Advisory Board of Archaeology bear testimony to the fact of the most fruitful integrated effort made by the Director General and the man behind it was A. Ghosh.

After Independence, a number of exhibitions were organized by the Archaeological Survey of India both in India and abroad. Site-museums were set up; the Survey has at present thirtyone site-museums. The Prehistory Branch was also organized. There was an all round increased activity.

Ghosh had succeeded in maintaining the momentum of the period of Sir Mortimer Wheeler. In his period, the regional-cultural sequence was made up. The high standard of the publications of the Archaeological Survey of India was continued and it earned international appreciation.

With an all-round increased activity, there was a tremendous increase in the responsibilities of the Director General of Archaeology in India.

Two projects known as the Temple-survey Project, Northern Region, and the Temple-survey Project, Southern Region, were undertaken by the Survey in 1955 for planned surveys of temple-architecture in various parts of India.

The former, with its headquarters at Bhopal, deals with the survey of temples in northern India, while the latter, with its headquarters at Madras, deals with the study of temples in southern India.

In the north, the famous Chandella temples at Khajuraho, Madhya Pradesh, have been studied by Krishna Deva. In other parts of Madhya Pradesh, as also in Rajasthan and parts of Gujarat, temples of dynasties contemporary with the Chandellas such as the Solankis, Kalachuris, Kachchhapaghatas and Parmaras were studied. The Gupta and post-Gupta temples up to A.D. 800 of north India as a whole were surveyed. It is more or less established that the maximum construction of Gupta temples is found to be in Madhyadesa in various stages of their evolution beginning with a square *garbhagriha* and culminating into the *sikhara* temple types.

In 1969-70, M.D. Khare wrote a monograph on the pre-Gupta temples of north India. In addition, the work on a few temples of the Gupta period and the group of temples at Un, District Kharagaon, Madhya Pradesh, was also undertaken. More than a dozen temples, elliptical, apsidal and circular, ranging in dates from 4th century B.C. to 3rd century A.D. were brought to light, the most notable being the elliptical temple of Vishnu at Besnagar (Vidisha) already famous for the Heliodorous Pillar. The uniqueness of the temple lies in its elliptical *garbhagriha* and *pradakshinapatha*. This clearly indicates that the temple architecture had evolved with all its components in pre-Christian era itself. Khare also edited *Malwa through the Ages*, a publication of the Department of Archaeology, Government of Madhya Pradesh, in 1981.

In south India all the cave-temples dating from the sixth century to the ninth century have been surveyed. These rock-cut temples were excavated by various dynasties like the Chalukyas of Badami, Pallavas of Kanchi, Pandyas of Madurai, the Eastern Chalukyas of Vengi and the Rashtrakutas of Manyakheda apart from various other local rulers. Five monographs on architecture, the one dealing with the cave-temples of the Pallavas by K.R. Srinivasan, the second on the Architectural Survey of Temples of Kerala by H. Sarkar, the third on the Cave-temples of Deccan by K.V. Soundara Rajan, the fourth on the Temples of Khajuraho by Krishna Deva, and the fifth on the Temples of Pratiharas in central India by R.D. Trivedi have already been published by the Archaeological Survey of India under the series, *Architectural Survey of Temples,* while Architectural Survey of Temples of Gangas of Karnataka by I.K. Sarma is in the press. Reports on other groups of temples including a detailed architectural survey of temples in the submersible area under the Srisailam Project (Andhra Pradesh) by K.V. Soundara Rajan and Antiquarian Remains in the Srisailam area by I.K. Sarma await publication.

Nagarjunakonda (the Telugu word 'konda' means 'hill') is situated on the right bank of the river Krishna in Guntur District of Andhra Pradesh. When the plan to convert the valley of Nagarjunakonda into a vast reservoir of water created by the construction of the world's highest masonry dam, Nagarjunasagar, was drawn up, the Archaeological Survey of India made a determined effort to salvage the stupendous archaeological remains for forestalling the impending archaeological tragedy. Extensive excavations under the direction of Dr. R. Subrahmanyam for six years commencing from August, 1954 throughout the length and breadth of the valley exposed more than a hundred sites ranging from the Early Stone Age to the late Medieval period. Nagarjunakonda is one of those sites in India where the excavated remains have revealed a continuous story of man from the pre-historic times (Early Stone Age) to the historical periods. Here one can see Man's march from savagery to civilization, a story spread over thousands of years. There are indeed few sites

in the world which can compare with Nagarjunakonda, where history speaks through the ages.

Another important excavation during that period was conducted at the Harappan site of Lothal in Ahmedabad District of Gujarat by S.R. Rao assisted by Dr. Suraj Bhan and K.M. Srivastava. The site is now more famous for the earliest dock in the world.

Kalibangan in District Ganganagar of Rajasthan was excavated by B.B. Lal, B.K. Thapar and Jagat Pati Joshi between 1961 and 1969. The excavation brought to light not only a large settlement of the Indus Civilization, but also one which preceded it. Belonging to this pre-Indus period (first half of the third millennium B.C.) was an agricultural field, ploughed on a grid pattern. This is perhaps the earliest ploughed field so far excavated anywhere in the world.

Burzahom, 24 km. north-east of Srinagar in Kashmir, which was excavated by T.N. Khazanchi, assisted by R.N. Pant and Sardari Lal, is a site noted for its singular remains of the neolithic period. Ujjain and Nagda in Madhya Pradesh were excavated by Dr. N.R. Banerjee.

Under the Second Five-Year Plan (1959-64), a village-to-village survey of the antiquarian remains was taken up.

The Archaeological Survey of India celebrated its centenary in December, 1961. From a one-man show in 1861, the Survey had by 1961 attained great proportions with a broad-based pyramidal structure. The functions of the Survey comprise the preservation of all important monuments throughout India, explorations and excavations, epigraphical research, application of scientific methods to archaeology, maintenance of archaeological museums and training — in fact, they include all branches of archaeology in its widest denotation. The occasion was marked by quiet celebrations, which were inaugurated by Jawaharlal Nehru on December 15, 1961, besides two major events which took place in New Delhi: the Centenary Exhibition intended to depict in modest proportions the vast archaeological wealth of the country and the first-ever International Conference on Asian Archaeology. A panoramic picture of India's past, right from the Stone Age to the dream-in-stone Taj Mahal, was depicted in this exhibition.

Even today we can see in the premises of the office of the Director General, Archaeological Survey of India, Janpath, New Delhi, the replica of a magnificent *torana* erected in the thirteenth century as one of the four entrances to a temple built at Warangal in Andhra Pradesh. There is the tall pillar, which is the replica of a single-stone pillar of Asoka, standing, with the lion-capital still in position, at Lauriya-Nandangarh in north Bihar. It bears a set of six Pillaredicts of Asoka. Another replica is that of an octagonal stone column in the Diwan-i-Khas at Fatehpur Sikri, the capital-town built by Akbar in about 1570. The column is surmounted by an enormous circular capital which consists of three tiers of radiating brackets. A marble column with capital, from the Mughal fort at Agra, is lavishly ornamented with scrolls of inlay-work in variegated colours — typical of the art of Shah Jahan. There is the replica of another *torana*, from Sidhpur in Gujarat, which formed the entrance of the now ruined grand temple of Rudramahalaya, the construction of which was commenced in the tenth century. All the replicas are of the size of the original monuments and these provide a glimpse of the rich heritage of India.

In 1961-62, the Archaeological Survey of India sent out three Expeditions abroad, one to Egypt and two to Nepal, which did much valuable work and brought home laurels.

The site originally allotted to the Expedition sent out to the U.A.R. which

was led by B.B. Lal, was a small-sized settlement of what are known in Egyptian archaeology as the A-Group people, located near the village of Afyeh, on the west bank of the Nile, 15 km. north of Aneiba, the headquarters of Egyptian Nubia. The Expedition could also carry out a survey of the terraces of the Nile near Afyeh and another small-scale excavation at a cemetery of the C-Group people, which lay near to the west of the neighbouring village of Tumas.

In May, 1960, A. Ghosh, Director General of Archaeology in India, was deputed by the Government of India to advise His Majesty's Government of Nepal on the re-organization of the archaeological service of that country. Of the many recommendations of Ghosh, two were implemented early, and two expeditions were sent out, respectively, for the exploration of the central part of the Nepalese *tarai* to be followed by the excavation of suitable sites, and an investigation and study of the Pleistocene geology and Stone Age potentialities of the Kathmandu valley.

The expedition in the *tarai* was led by Mrs. Debala Mitra. Janaklal Sharma of the Department of Archaeology of the Government of Nepal also joined the Expedition. The work was started in February, 1962, and completed in about four months. With Lumbini as its temporary headquarters, the party covered much new ground and discovered and examined a large number of sites in Bhairhawa and Taulihawa Districts and later on shifted itself to Ramghat for the excavation of the early city-site of Tilaurakot and the early medieval temples at Kudan.

The other expedition in Nepal, which worked in the Kathmandu valley in September and October, 1961, was headed by Dr. R.V. Joshi of the Archaeological Survey of India; Janaklal Sharma represented the Government of Nepal. Though the Expedition did not find any lithic tool, it collected valuable data on the Pleistocene geology of the valley.

In pursuance of another recommendation of Ghosh, a comprehensive sculptural and iconographic survey of the Kathmandu valley was made in 1963 by Krishna Deva, of the Archaeological Survey of India, with the co-operation of the Directorate of Archaeology, Government of Nepal.

In Nepal, the seventeenth-century mural paintings in the palace at Bhaktapur were chemically treated and preserved by a team of experts of the Survey.

In 1956, a brief mission led by T.N. Ramachandran was sent to Afghanistan by the Archaeological Survey of India, with a view to studying the archaeological wealth of that country in general and those remains and antiquities in particular which showed Indian affinities. The delegation toured that country extensively, visiting Kabul, Ghazni, Kandhar, Farah, Herat, Mazar-i-Sharif, Haibuk, Kunduz, Bamiyan, Begram, etc. Some of the important sites, monuments and objects visited or studied were: stone implements from Karakamar, petroglyphs near Khak-i-Ghulam Ali, proto-historic (Zhob-like) terracottas from Deh Morasi Ghundai, *stupas* at Hadda and Haibuk, Buddhistic caves at Bamiyan, defences at Balkh, the fortress at Lashkari Bazar, the famous towers at Ghazni, Chehl Zina at Kandhar, the expansive arches at Qala-i-Bust, the Jama Masjid at Herat, Indo-Greek coins, paintings from Fundukistan and a large number of Buddhist and Brahmanical images lodged in the Kabul Museum. Ghosh gave two ideas for work in Afghanistan — carrying out of repairs to the Big Buddha and the Small Buddha, the two tallest statues of Lord Buddha (55 and 38 metre high) in the world at Bamiyan and the undertaking of excavations at Begram. Mrs. Indira Gandhi, Prime Minister of India, visited Bamiyan in May, 1969, when an

announcement was made by her to take up the work of preservation in collaboration with the Royal Afghan Government. Work was commenced on the 38 metre high Small Buddha in 1969 which has been completed. Cleaning and chemical preservation of paintings in the caves, adjoining the central niche containing the Buddha image, have brought to light new paintings which were hitherto covered with soot, dust and other extraneous deposits. This work of great magnitude has been widely appreciated on account of the very dextrous work done by the Indian team in consolidating and holding back the badly fractured portion of the right wall of the main niche, and restoration of the fallen parts of the caves, on the basis of available clues. A good deal of restraint had to be exercised in the restoration of the missing parts, for any excessive reconstruction was not only unwarranted but would have amounted to introducing new features. The conservation of the Big Buddha, which is as high as a modern eighteen-storeyed building, has also been carried out. The Indian team was led by R. Sengupta, Director (Conservation), of the Archaeological Survey of India. Dr. B.B. Lal, Chief Archaeological Chemist, was Incharge of the chemical preservation work. At Bamiyan lie scattered the remnants of a glorious civilization that flourished eleven centuries ago. The excavation at Begram in Afghanistan has yet to be undertaken.

Khwaja Parsa Mosque at Balkh in Afghanistan, a late Tirmurid monument (fifteenth century), which was to be restored as a part of the agreement on the proposed excavation at Begram, was taken up for repairs by S.G. Korde, V. Ramasubramaniam and N. J. Thirunavukarasu of the Survey earlier at the request of the Afghan Government. The monument duly preserved ahead of schedule was handed over on November 26, 1976, to the Afghan Minister of Information and Culture, who expressed his gratitude to the Government of India.

In 1962, the Radiocarbon Laboratory at the Tata Institute of Fundamental Research was set up at the instance of Dr. Homi Bhabha. The radiocarbon technique had already been well established as a physical method, which could date in an independent and objective manner, with a high degree of accuracy, archaeological specimens containing traces of carbon, whose age ranged between a few hundred years and a few tens of thousands of years. The method was originally discovered by Willard Libby and his co-workers in the years immediately following the World War II. Hundreds of dates from a wide variety of Indian archaeological horizons have been measured by D.P. Agrawal. Archaeology should certainly be regarded as one of the most appropriate subjects for linking science with humanities.

In 1963, the provisions of the Ancient Monuments and Archaeological Sites and Remains Act, enforced in the rest of the country in 1959, were also extended to the former French and Portuguese territories, viz., Pondicherry and Goa, Daman and Diu.

In 1965, the Government of India appointed an Archaeology Review Committee, with Sir Mortimer Wheeler as Chairman and Professors Niharranjan Ray, H.D. Sankalia and S. Nurul Hasan as members, to (i) assess the work of the Archaeological Survey of India, (ii) make recommendations about the lines on which the Survey should plan its work for the next five years and assess its requirements in terms of personnel and finance and (iii) make suggestions for closer co-operation with the State Departments of Archaeology and the Universities. This was to be the second review of its kind, the first having been made by Sir Leonard Woolley in 1938 with a more limited objective. Indian archaeology had taken enormous strides—in organization,

in knowledge and in technique — during the intervening period. The Committee submitted its Report to the Minister of Education on April 22, 1965.

The Committee found the Survey on the whole the most efficient, as it is certainly the most comprehensive, in the world. It recorded that India was getting good value for its expenditure on archaeology. A few deficiencies of the Survey were also pointed out in the Report.

The report was accepted in principle by M.C. Chagla, the then Union Education Minister.

Puratattva, the bulletin of the Indian Archaeological Society, has been published annually since 1967-68, the founder-editors being Prof. A.K. Narain, Dr. M. Seshadri and Dr. S.B. Deo while its present (1988) editor is Dr. S.P. Gupta. *Man and Environment*, the bulletin of the Indian Society for Prehistoric and Quaternary Studies, has also been published annually since 1977, the founder-editor being Dr. V.N. Misra while its present (1988) editor is Dr. Dilip K. Chakrabarti.

On February 8, 1968, Ghosh retired after fifteen eventful years of Director-Generalship and the Ghosh era of Indian archaeology came to an end. After his retirement, he went to some Gulf countries as UNESCO Expert and became a Fellow of the Indian Institute of Advanced Studies, Simla, in which capacity he wrote the monograph *The City in Early Historical India*. During 1972-73, he was Visiting Professor of Art and Archaeology in the University of Jakarta in Indonesia. One of his monumental works is the editing of the three volumes of *Jain Art and Architecture*, published by the Bharatiya Jnanpith, New Delhi, in 1975. In 1980, he completed another monumental work, entitled *Encyclopaedia of Indian Archaeology*, a project sponsored by the Indian Council of Historical Research, New Delhi, of which he continued to be a Fellow till the last day of his life. His sudden death on 25th August, 1981, caused a great loss to the cause of archaeology in India. A volume of essays in memory of A. Ghosh, *Archaeology and History*, edited by B.M. Pande and B.D. Chattopadhyaya was published in 1987.

B.B. Lal took over as Director General in 1968. During his period, preservation and conservation work was started at Bamiyan in Afghanistan in 1969, and excavations were started at Vikramshila and Purana Qila; the excavations at the former site were taken up as a project. Cementation of the foundations of the Qutb Minar, Delhi, was started in 1971 and completed in 1972.

B.B. Lal, on whom was conferred the status of *ex-officio* Joint Secretary to the Government of India, took voluntary retirement from Government service in the middle of 1972 and joined the Jiwaji University, Gwalior, as Senior Professor and Head of the School of Studies of Ancient Indian History, Archaeology and Culture. He took this somewhat unusual step in order to be able to carry out some research projects for which he was unable to find time as the Director General of the Survey.

M.N. Deshpande took over from Lal as Director General on June 8, 1972. He was also *ex-officio* Joint Secretary to the Government of India.

With a view to regulating the trade, including export of art treasures, Parliament passed the Antiquities and Art Treasures Act (1972). This Act intends to exercise an effective check on the smuggling of antiquities and art treasures. Under the Act, registration of antiquities by the owners is undertaken, both private and individual, and licensing of traders dealing in the business is envisaged. It also empowers the Government to effect compulsory acquisition of art objects in public interest.

While the registration of antiquities is being done at the State level, the licensing of dealers and compulsory acquisition of art objects is being done at the level of the Centre. Being a Central Act, the responsibility for enforcement rests with the Centre.

At the international level, India has ratified the UNESCO conventions on the Protection of Cultural Property in the Event of Armed Conflict (1959), the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property (1970) and Protection of the World Cultural and National Heritage (1972).

The 400th anniversary of the founding of Fatehpur Sikri, the capital-city built by Akbar, was celebrated on December 2nd and 3rd, 1972. A seminar on the history, art and architecture of Fatehpur Sikri and social and economic conditions during the time of Akbar was also held on this occasion.

Excavations at Piprahwa, District Basti in U.P., by the Archaeological Survey of India under K.M. Srivastava, Superintending Archaeologist, have brought to light 31 sealings of terracotta bearing in different stages of preservation, the legend *Om Devaputra Vihare Kapilavastu Bhikhsu Sangha*, and its variants in the Brahmi script of the first-second centuries A.D. This is, indeed an outstanding discovery offering almost final identification of Kapilavastu, the Capital of the Sakyas. The sealings in question belong to the order of the monks of Kapilavastu living in the 'Devaputra Vihara'. They were found inside a quadrangular monastery built of bricks, on the eastern fringe of the ancient *stupa*-site at a depth of 1.05 to 1.55 metres in a very limited area that had been taken up for excavation. The remains of the ancient city, in the context of the discovery, were looked for in the ancient mounds in the neighbourhood of the Piprahwa *stupa* and the monastic complex.

Explorations since 1957 and excavations in 1972 and 1973 have led to the discovery of about 630 rock shelters at Bhimbetka (also pronounced as Bhimbethaka, i.e., the seat of Bhima), District Raisen in Madhya Pradesh. Of these, as many as 500 have paintings on the walls and ceilings. These paintings are far more numerous and perhaps far more interesting than the Classic paintings at Altamira in Spain or Hascaux in France. An authentic book on the subject is *Stone Age Painting in India* (Cambridge, 1976) by V.S. Wakankar and Robert Brooks.

The paintings, which are in red, white and green colours, depict wild animals, hunting scenes, dances, caparisoned horses and elephants, etc. Preliminary study had indicated that the paintings showing wild animals, hunting scenes, dances, etc., are the oldest of the group and would seem to belong, according to the excavators, to the Mesolithic period which could be placed chronologically around 10,000 B.C. Some of the paintings seem to have been executed in the early historical period. The discoveries, when fully examined and studied, are likely to throw light on contemporary life in India from the Mesolithic age to the early historical period and on the tradition of art.

Pre-historic rock-paintings belonging to the neolithic period were discovered at Chiklod, about 40 km. from Bhopal, in 1975. Each of the four rock-shelter sites has 50 to 60 rock-shelters. Beneath the canopies are the paintings. The chief significance of the discovery, perhaps, lies in that it strengthens the theory that along with Bhimbetka the Chiklod sites might form a part of a possible belt of rock paintings which stretches right up to Raisen.

That the Chiklod paintings belong to the neolithic period is evident from the prominence of animals and huntsmen in the parietal representations. There are several paintings of bulls, horses, tigers and deer. A particularly clear

painting, two feet by four feet, is that of a swamp deer. There is a conspicuous absence of vegetation and agricultural landscape in the paintings showing that man had not yet graduated to the farming stage.

The paintings, which are in the form of individual pieces as well as panels, have two other features that indicate the primitiveness of the age. The animal profiles are often drawn in a diagonal pattern, suggesting that the painters lacked the conceptual notion of a horizontal base. There are, secondly, numerous instances of superimposition of one painting on another, which means that the tribes were still too undeveloped to have acquired reverence for preceding art. Since the colours used were derived from natural earth pigments, those that occur mostly in the paintings are different shades of ochre, red and brown.

An interesting group of ancient paintings of the Megalithic period and rock bruisings in a huge rock-shelter were discovered in 1984 by Prof. K.V. Raman of Madras University at Chennarayanapalli village near Gudiyattam in North Arcot District of Tamil Nadu. The paintings which are found on the ceiling and walls of the huge cave seem to depict a long hunting or battle scene. A row of horses with mounted riders is seen amidst a number of fighters or hunters brandishing swords and daggers. A few are seen escorting the horses. Generally, the bodies of horses are painted with square or rectangular profiles. There are also a number of totemic symbols drawn in white, depicting concentric squares and criss-cross lines. Such symbols and paintings of magical and fertility significance have been reported from many other parts of India also.

The Estimates Committee of Parliament in 1974-75 reviewed the functioning of the Archaeological Survey of India and made 76 recommendations of which 62 were accepted by the Government.

In 1975, the Archaeological Survey of India established its eleventh Circle named Mid-southern Circle with headquarters at Bangalore.

A project known as Archaeology of the *Ramayana* Sites to be executed under the direction of Prof. B.B. Lal, former Director General, Archaeological Survey of India, was inaugurated at Ayodhya in Uttar Pradesh on March 31, 1975, by Prof. S. Nurul Hasan, the then Union Education Minister. It was estimated to cost about six lakh rupees over a period of five years. In the first year, trial excavations were carried out at Ayodhya, the principal site of the story. Excavations were carried out at other noteworthy sites featuring in the story like Nandigram, where Bharat met Rama, and Sringaverapura, where Rama crossed the Ganga on his southward journey, Bharadwaj Ashram and Chitrakut where he halted during that journey, Parihar, where Sita was abandoned, and so on.

The exploration, accompanied by trial-trenching as well as excavations where necessary, will bring to light the lowermost material culture at these sites. Horizontal excavations at selected sites would reveal in detail the way of living and socio-economic conditions of the people during the *Ramayana* period.

The excavations at Ayodhya have established that the antiquity of the site goes back to early seventh century B.C. The excavations at Sringaverapura, District Allahabad, have revealed that the site where Rama, Sita and Lakshmana crossed the Ganga on their way to sylvan exile was not earlier than 1050 B.C.

During the tenure of M.N. Deshpande as Director General, the Antiquities and Art Treasures Act, 1972, came into force and machinery for its

implementation through the Central and State Governments was established. Thousands of antiquities in private possession were registered for the first time and a beginning was made towards compiling a national register of antiquities. The trade in antiquities was also regulated as a result of which the chances of surreptitious export of antiquties were minimised.

In 1977, the conservation and preservation work at Bamiyan in Afghanistan was completed by the Survey. Atal Behari Vajpayee, the then Minister for External Affairs, Government of India, and M.N. Deshpande, Director General, Archaeological Survey of India, handed over the monuments after completion of the repairs to the Government of Afghanistan.

An Expert Committee for the conservation of the Jagannath temple at Puri was constituted in 1973 and the temple was declared as a 'protected monument' in 1978. Conservation work, which is of a special nature, has already been taken up. Conservaton of Gomphas — monuments of Lamaistic affiliation — was started in the Himalayas. Special mention may be made of such work at the Tabo monastery in the Spiti valley of Himachal Pradesh where extensive mural paintings of the eleventh century needed urgent chemical treatment. Extensive chemical preservation works were undertaken and the Orissan temples freed from moss and lichen. The Chemistry Branch was strengthened by the appointment of a Director (Science) and three Superintending Archaeological Chemists and anti-pollution work was commenced in respect of the Agra monuments.

Laboratories under the Chemistry Branch of the Survey were opened at Ajanta and Dhar to deal with the problems of preservation of paintings of Ajanta and Bagh. The National Research Laboratory for Conservation of Cultural Property was set up in New Delhi in 1976 and shifted to Lucknow in 1978.

Under the National Service Scheme, students were also involved in archaeological work with a view to popularising archaeology and creating a wider awareness of the national heritage.

The UNESCO Convention on the Means of Prohibiting and Preventing Illicit Import, Export and Transfer of Ownership of Cultural Property was ratified in December, 1976, and the Instrument of Ratification deposited with the Director General, UNESCO.

Excavations at a number of sites like Surkotada, Sittanavasal, Satanikota, Ayodhya, Antichak, Mathura, Piprahwa, Bhagwanpura, Dadheri, Manda, Daimabad and Hulas were taken up. At present, Manda on the Chenab appears to be the northernmost site of late Harappan culture in India. Similarly, Daimabad appears to be the southernmost late Harappan site in India. North of the Hindu Kush, the first Harappan settlement has been brought to light by a Franco-Afghan team at Shortugai.

The budget of the Survey for 1979-80 rose to about seven crore rupees, while it was about one crore and sixty-two lakh rupees for 1969-70.

On December 1, 1978, B.K. Thapar took over as Director General, Archaeological Survey of India, and *ex-officio* Joint Secretary to the Government of India, from M.N. Deshpande on the latter's retirement from Government service.

In June, 1979, an International Conference on Harappan Civilization was held at Srinagar, Jammu & Kashmir, in which forty scholars from India and abroad participated. For the protection of the cultural heritage of India, a meeting of the State Ministers of Culture with the Union Minister of Education and Culture was held in New Delhi in June, 1979.

In 1979, the Central Government declared the following human works of art, not being antiquities, to be art treasures for purposes of the Antiquities and Art Treasures Act, having regard to their artistic and aesthetic value, namely: Paintings (including drawings, sketches, diagrams and the like) and objects of plastic art by (1) Ravi Varma, (2) Gaganendra Nath Tagore, (3) Abanindra Nath Tagore, (4) Sailoz Mookerjee and (5) N Roerich.

In order to decide the future of the implementation of the Antiquities and Art Treasures Act, 1972, meetings were held by the Director General, Archaeological Survey of India, with the representatives of all the State Governments at Lucknow and Madras in 1979.

The work of de-plastering from the *Deul* portion of Lord Jagannath Temple at Puri in Orissa has made satisfactory progress. The de-plastering is restricted upto the *Vimana* as per recommendations of the Expert Committee. After de-plastering, the bulged portions of the wall are re-set, the missing stones are replaced as per original mouldings, the wide cracks are grouted with cement mortar and sealed with Epoxy Resin. This type of work has been done for the first time in India and this would enable the visitors to see the original carvings, animal friezes and sculptures of the twelfth century, which were hidden by lime-plaster for, approximately, the last three hundred years. An international seminar on the chemical preservation of Ajanta Paintings was held in 1980.

In Andhra Pradesh, the Srisailam Project threatened the Kudavalli Sangamesvara temple with submersion by the impounding waters. But the Archaeological Survey of India has successfully averted this tragedy. The temple with its fully decorated enclosure-walls has been dismantled successfully and transported to Alampur, 25 km away, where it has been reconstructed with the original material. The area which has been submerged under water has been archaeologically explored and excavated.

According to the notification issued on 15th May, 1980, sculptured figures in wood (both in relief and rounds), i.e., wood-carvings and wooden sculptures which have been in existence for not less than one hundred years, shall now also be required to be registered under the Antiquities and Art Treasures Act, 1972, like (i) sculptures in stone, terracotta, metals, ivory and bone, (ii) paintings (including miniatures and *tankhas*) in all media, that is to say, paper, wood, cloth, skin, silk and the like, and (iii) manuscripts, where such manuscripts contain paintings, illustrations or illuminations (that is, adornment with coloured lettering or illuminations).

In response to an invitation from the Pakistan National Commission for Co-operation with UNESCO, Thapar participated in the International Symposium on Indus Civilization held at Karachi from 30th December, 1978 to 2nd January, 1979, in which scholars from Afghanistan, France, India, Italy, Pakistan, UK and USA took part. Thapar was elected one of the Vice-Presidents of the symposium and also chairman for one session. One of the results of this symposium was that a well-documented illustrated book on the Indus Civilization would be prepared especially by scholars who have done field work both in India and in Pakistan. A Steering Committee was constituted of which Thapar was a Member to prepare a framework of the proposed comprehensive book. In May 1980, under the auspices of UNESCO, a meeting of the Steering Committee was held at Islamabad where detailed contents of the books were framed and the contributors of the various chapters, who are eminent archaeologists of the world, were listed. Thapar was appointed one of the Editors of this volume, besides being asked to contribute a few chapters.

Under the Fifth Five-Year Plan (1974-79), nine schemes were initiated with an approved outlay of Rs. 5.83 crores. The schemes included preservation of cultural heritage, development of monuments, research and training, documentation of monuments, publications, setting up of museums and sculpture-galleries, promotion of archaeological studies in universities and other research institutes, enforcement of the Antiquities and Art Treasures Act, and implementation machinery. For the implementation of the programmes or projects included in these schemes, about seven hundred posts of various categories were created during the period of this Plan.

Under the Sixth Five-Year Plan (1979-84) with an outlay of Rs. 6.50 crores, six new schemes were proposed and these related to the reorganization of the existing Circles which would result in the creation of three more Circles with headquarters at Guwahati, Jaipur and Chandigarh, expansion of the School of Archaeology patterned on the School of Oriental and African Studies and the Institute of Archaeology, University of London, setting up audio-visual and documentation centres, development of research activities by the addition of three more Excavation Branches as also the undertaking of underwater archaeology. The schemes under the Seventh Five-Year Plan (1984-1989) are under implementation.

All scientific aids, also various dating devices, palynological studies, soil and spectrochemical analysis, etc., are available with various laboratories, such as Physical Research Laboratory, Ahmedabad, Bhabha Atomic Research Centre, Bombay, and the Birbal Sahni Institute of Palaeobotany, Lucknow. Besides, the laboratories attached to the Departments of Archaeology of the Deccan College, Pune, and the M.S. University of Baroda also undertake scientific investigations including palaeopathological studies of animal and human skeletal remains, depending upon their slender resources in men and materials.

After Thapar's retirement from Government service on 31st January, 1981, Dr. (Smt.) Debala Mitra, Additional Director General (Archaeology) since 6th September, 1979, took over as the Director General of the Survey on 12th May, 1981. During the term of Smt. Mitra, the standards of the Survey in all the branches of archaeology were maintained. Six site-museums were added, two additional Excavation Branches were set up, the Noth-eastern Circle was created with headquarters at Guwahati and the monuments of Goa, Agra and Delhi received a special facelift on account of the Non-Aligned Meet, the Commonwealth Heads of Governments' Meet and the Asian Games.

Indo-Soviet Project of Archaeological Studies

The advisory committee of the Indo-Soviet Joint Project in the field of comparative archaeology and ethno-linguistic studies, which met in Allahabad on the occasion of the silver jubilee celebrations of the Department of Ancient History and Archaeology of Allahabad University in 1980 recommended that a seminar on Bronze Age culture of Soviet Central Asia and India and on the Aryan problem should be held at Allahabad in March, 1981.

At the advisory committee meeting, attended by Prof. S. Nurul Hasan, the then Vice-President, Council of Scientific and Industrial Research, and Prof. G.M. Bongard Levin of the Institute of Oriental Studies, Moscow, the Indian side proposed that a seminar on Kushan archaeology and Buddhist culture be organised in any of the Soviet Central Asian republics in the autumn of 1982. It was recommended that both sides would explore possibilities of awarding research fellowships, through appropriate authorities, for under-

taking study in Bronze Age, Kushan and Buddhist culture, and medieval art and archaeology.

Excavations in Egypt

In 1981-82, J.S. Nigam was deputed as Consultant to the Excavations at Quseir Al-Quadim in Egypt conducted by the Oriental Institute, University of Chicago, U.S.A. This site is an ancient port, eight km. north of the modern town of Quseir on the Red Sea. Excavations were started in 1978-79 and carried on up to 1982 for three field-seasons. There was a natural harbour and the Romans for the first time utilized it for their external trade with the East. The excavations revealed that the first habitation started on the coral-bed. The structures both habitational and warehouses were built of mud-bricks. The Roman habitation began with the beginning of the first century A.D. and continued till about the end of the third century A.D. The pottery and antiquities recovered from the Roman levels gave definite evidence of trade with India. The inscribed sherds in Brahmi characters, Rouletted ware, and block-printed cotton textile pieces were found in large quantities and proved the existence of trade between India and the Roman world.

The next habitational phase started in about the thirteenth century A.D. with the advent of the Muslims and continued up to the fifteenth century A.D. In this period, the structures were built generally of mud-bricks but *kankar* stone had also been used sometimes in foundations or otherwise for raising the walls. Some of the pottery types bear remote similarity with contemporary Indian pottery. Another item of Indian origin recovered from the Islamic levels was the pieces of cotton textiles.

Indian Archaeology and the World Exhibition

On the occasion of the Non-Aligned Meet, the Survey under the direction of Jagat Pati Joshi organised a photographic exhibition in New Delhi, entitled 'Indian Archaeology and the World', from 8th March, 1983. The exhibition gave an idea of the activities of the Survey in India and abroad. The photographs included those of the most remarkable excavations, structural conservation, chemical preservation and important archaeological expeditions sent by the Survey to Egypt, Afghanistan, Nepal and Cambodia. The exhibition on the one hand gave a cavalcade of the cultural heritage of India and on the other its preservation. It highlighted the work of Indian archaeologists in foreign countries.

Angkor Wat, Cambodia

A team of nine members of the Survey led by K.M. Srivastava was sent to Cambodia in the month of February, 1982, to prepare a comprehensive project report on the preservation of the temple of Angkor Wat, which is a monument of international importance. The team stayed in Cambodia for a period of four months during the course of which two laboratories, one chemical and the other photographic, were also established. The materials and equipments for the laboratories were sent earlier by the Survey.

The temple of Angkor Wat, dedicated to Vishnu, was built by the illustrious Khmer King, Suryavarman II, who ruled at Angkor between A.D. 1113 and 1150. It is a triple terraced monument with surrounding galleries, cruciform courts and five towers looking like peaks. The five central towers of the temple represent symbolically the five peaks of Mount Meru, the abode of the gods, and the extensive moat all around, the waters of the ocean. The

problems were studied and measures of conservation suggested. Earlier in October, 1980, a small team consisting of R. Sengupta, B.N. Tandon and R.K. Dutta Gupta had visited Cambodia to report on the damage to the temple of Angkor Wat and other monuments.

Mirdha Study Group's Recommendation on Preservation (1983)

In January, 1983, the Government of India appointed the following Expert Group to carry out a professional study of the steps that need to be taken in the matter of preserving India's historical monuments in the light of multi-dimensional factors responsible for their damage, especially environmental pollution and vandalism. Shri R.N. Mirdha was appointed the Chairman of the Group and the Members were: Dr. T.N. Khushoo, Shri M.N. Deshpande, Shri B.K. Thapar, Dr. B.B. Lal, Dr. K.K. Sinha, Smt. Debala Mitra, Shri Man Mohan Singh and Shri J.P. Joshi (Member-Secretary). It was resolved to form three Sub-Committees to look into (i) conservation of monuments, (ii) explorations and excavations and (iii) setting up of an Institute of Archaeology. The principal recommendations of the Study Group are summarized below.

The Background

Considering the heavy responsibilities devolving upon the Archaeological Survey of India and the increasing new demands for the preservation of the cultural heritage of the country, it was noted that the budget allocations are woefully low with the result that the Survey finds itself unequal to the task assigned to it. There is an urgent need, therefore, for a substantial increase in its budget allocation. The Group is firmly of the view that the earnings obtained through entrance fee levied on various monuments should be added to the budget allocations of the Survey as a non-lapsable fund.

The Survey should not be considered merely an administrative organisation but, in view of its highly specialized functions, should be accorded the status of a scientific and technical institution, enjoying autonomy in its functioning like other comparable institutions under the Government.

Legislative Measures

In view of certain observed lacunae in the Ancient Monuments and Archaeological Sites and Remains Act, 1958, and Rules framed thereof, it is necessary that the said Act may be amended enabling the formulation of suitable guidelines for ensuring the historical character and environmental balance of the monuments. While amending the Act, the recommendations made by the Joint Committee of the Air (Prevention and Control) Bill, 1978, should be duly taken into consideration. The composition of the Archaeological Commissions to be set up in each state, as envisaged in the model bill prepared by the Town and Country Planning Organization, should include at least two non-official Members who have commitment to the cause of preservation of cultural property. It should be made obligatory to obtain the clearance of the Archaeological Survey of India for all proposals affecting the monuments or their environs. With a view to encouraging voluntary contributions from the public for the preservation of national monuments, it is felt necessary that such contributions may be exempted from income tax and

the Survey allowed to use such contributions over and above their budget allocations.

Exploration and Excavations

With a view to developing archaeology in the Universities, including upgrading of teaching and research activities, it is necessary that the University Grants Commission should strengthen the existing Departments in some select Universities through liberal grants. The status of archaeology as an independent discipline, should be recognized in at least two of the Central Universities. The minimum experience of 5 years of field work must be made an essential qualification for the post of Reader and above in such Departments of Archaeology.

In furtherance of the same objective of encouraging University Departments to undertake field work and to enable them to publish their reports on time, it is necessary that the existing principle of matching grants, followed by the Survey, as grant-in-aid should not be insisted upon and that grants should also be made available for the preparation of reports which are an integral and indivisible part of excavation. The University Grants Commission should also look into the requirements of adequate space for storage and display of the excavated material without which a reference collection cannot be built up for research purposes.

The University Grants Commission should examine the syllabus relating to the teaching of archaeology, followed by the various Universities, and make it as uniform as possible. Steps should also be taken to develop certain fields of specialization in some Universities.

Before the State Departments are allowed to undertake projects of field-work and research, competent and adequately trained staff should be made available by their respective Governments. With a view to sustaining uniform standards of excavation techniques, the Director General, Archaeological Survey of India, should oversee the field work done by the State Departments of Archaeology and assist them both in matters of providing technical guidance as also in training.

In the light of the problems to be tackled and the probable areas of field-work, it is considered necessary that of the two newly created Excavation Branches, one should be located in the south, either at Madras or at Mysore, and the other in the north, either at Chandigarh or at Jaipur. In view of the magnitude of the problems relating to prehistoric investigations, one more Prehistory Branch should be created within the Survey with headquarters somewhere in the north, say at Chandigarh.

The existing allocations for explorations and excavations are considered too small to meet the requirements. The allocations, therefore, under this sub-head should be raised to at least 25 per cent of the Survey's budget.

Participation by foreign archaeologists in archaeological field-work in India may be permitted only to institutions represented by qualified archaeologists and should always be on collaboration basis. Co-operative projects between India and foreign institutions are considered a vital component of the further development of Indian archaeology. Certain areas and problems can, however, be kept reserved for Indian agencies. The Central Advisory Board of Archaeology may frame a deed of concession, stipulating conditions under which permission could be granted to foreign missions and institutions to undertake archaeological field-work in India.

The inadequately explored areas and major projects listed in the report

should be given priority while planning archaeological field-work in the country. The Standing Committee of the Central Advisory Board of Archaeology while examining proposals of field-work submitted by the various agencies in the country should keep in view the requirements of national projects, so that archaeological work in the country remains within the framework of planning.

The bottlenecks in the functioning of the Village-to-Village Scheme may be removed, both at the level of the Survey and at that of the universities. An annual meeting (workshop) should be convened to review the progress of the Scheme.

Steps should be taken to develop underwater archaeology in India. This could be done in collaboration with the National Institute of Oceanography in Goa. Likewise, a comprehensive plan should be formulated for surveying important and potential areas through air photography.

In view of the threat posed by the various development schemes, a Salvage Archaeology Wing should be set up in the Survey so that the archaeological heritage of the country is not lost as a consequence of such schemes. The likely expenditure on such salvage operations should appropriately be provided in the allocations for the particular scheme itself.

Preservation and Maintenance of Monuments

With a view to preserving monuments against various factors of decay and damage, including air-pollution, it is necessary that an integrated approach should be adopted for the development of monuments. This integrated approach should not only cover structural and chemical preservation but should also take into consideration 'area development', so that the environments of the monuments are not disturbed. An expert group may be set up for making an in-depth study of the problems and laying down priorities. The monuments listed in the report need urgent attention for such planning.

Conservation of excavated remains should be considered equally important and urgent as that of standing monuments. In the fitness of things, it would be necessary that the excavator should be provided with adequate conservation staff and funds to undertake preservation of the excavated remains. At the initial stage, the work of preservation of the excavated remains should not be the responsibility of the Circle.

Regular inspection of the monuments should be ensured by the Circle staff as also by the Directorate. It would be a good idea if the Directors at the Headquarters are given charge of two Circles in addition to their own assigned charge. Each Director may visit at least 50 monuments in a year and take stock of all aspects for the safety of monuments. For each monument, there should be complete inventory, giving details about attached land, brief historical note, architectural features with movable and immovable sculptures, tools and plants, etc.

Town planning schemes affecting monuments, should ensure development control, so that the monuments are not unnecessarily encroached upon.

A High Power Committee under the Chairmanship of Chief Secretary, Government of Uttar Pradesh, should be set up to thrash out matters relating to the maintenance of monuments under the management of the Husainabad Trust at Lucknow.

States should be asked to enact suitable legislation to stop indiscriminate reconstruction and renovation of the monuments under the Religious Endowment Boards.

In the interest of effective conservation, revival of worship should not be allowed on monuments where it was not in vogue at the time of protection nor any new usage or custom be permitted in respect of those monuments where religious worship has been in vogue since the time of protection. On certain secular monuments, however, specified usage for cultural purposes, consistent with the character of the monument, could be allowed.

Son-et-Lumiere and floodlighting could be permitted in respect of monuments in areas where the monuments are to be projected as landmarks during the night or where it is felt necessary for security reasons. Monuments under religious use or of religious affiliation should not be allowed to be used for such purposes. The maintenance of the floodlighting should be done by the same agency which is responsible for installation. Preferably such installations should be done by the Tourist Department in consultation with the Survey.

For keeping a record of the conservation measures undertaken at the monuments, the practice of maintaining log-books should be re-introduced and strictly followed. Equally necessary is to pursue vigorously the survey of monuments, so that all lands appurtenant to the monuments is demarcated.

Documentation Centres should be set up at two or three centres in the country where all measured drawings of monuments of the country are stored and can be referred to by interested scholars.

State Governments should be urged to lay *pucca* roads to monuments to facilitate their regular inspection all the year round.

More monuments should be brought under the category of entrance fee which should be raised in a graded manner, viz., Rs. 2/- for important monuments and Re. 1/- for others. This should be applicable to all visitors, foreign or Indian, with the usual concession to children, etc.

The opening hours of the monuments should be so fixed as to stop any misuse beyond sunset. The Taj and Agra Fort are a case in point. Tourist Department should be entrusted with the responsibility of providing public amenities at the monuments. The location of lavatories etc. should be decided upon in consultation with the Survey.

It was noted that budget allocations for conservation of monuments in the States are wholly inadequate, with the result that full conservation of monuments under their charge cannot be properly done. The problem is further compounded by the inadequacy of the properly trained staff. It was felt necessary, therefore, that a Cell should be created in the Survey to provide technical guidance and assistance to the States in drawing up conservation plans and estimates and also in the execution of work. The Director General and other officers of the headquarters should, during their normal tours, also visit State protected monuments and give necessary directions for maintenance.

With a view to imparting an academic character to the State Departments of Archaeology, it is considered necessary that they should be headed by professionals.

In view of the urgency of preserving monuments of domestic and secular architecture which are less than 100 years old, and as such fall outside the purview of the Archaeological Survey of India and the State Departments of Archaeology, it is necessary that non-Government organizations like the National Heritage Trust or some such other agencies may take charge of these monuments for preservation purposes.

For an all-round development of the monuments, landscaping and horticultural operations must be undertaken around the monuments. Purpose-

ful plantation around a monument can safeguard it from salt-laden winds, sand blasts and deposition of dust besides stopping of erosion.

Additional staff with the requisite training and equipment should be provided for the proposed programme of work by the National Research Laboratory for Conservation at Lucknow as also by the Survey's Science Laboratory. In view of the complementary nature of the work of these two laboratories, it is recommended that their programme of work should be so planned as to avoid any duplication of effort and under-utilization of the equipment.

A Science Advisory Committee should be set up for offering necessary guidance for these two laboratories in planning multi-disciplinary studies.

An uptodate list of protected monuments containing all essential details including brief historical accounts, agreements entered into, ownership, current usages, etc., should be prepared and printed. Similar lists should also be prepared by the States for their respective monuments.

A Special Cell should be created under the Director (Conservation) and Director (Science) for working out the rates of various items of conservation work undertaken at archaeological monuments. The existing practice of preparing estimates on rates operated by Public Works Departments has been found to be not practicable, often entailing revision of estimates when actually executed.

Problem-oriented studies relating both to structural and chemical preservation should be taken up for which a special Cell should be created.

The Conservation Manual, published by the Archaeological Survey of India as early as 1922-23, needs revision especially in view of the advancement of technology and the experience gathered by the conservators during the last sixty years or so. This *Manual* should spell out the norms and techniques to be adopted for (a) structural and chemical conservation works; (b) environmental protection and pollution controls, and (c) preservation of excavated sites, and (d) a host of other related problems like the usage of monuments, environmental conservation, area development, etc.

Museums, Monuments and Security

For an efficient administrative functioning of the Archaeological museums as also for enforcing effective security arrangements, each museum should be manned at least by two persons; at no time should the museum be left under the charge of a Clerk or a Modeller in the absence on leave or otherwise of the Technical Assistant. With two persons looking after the museum, the preparation of catalogues and full documentation of the antiquities, which had lagged behind, would also be possible.

In view of the expanding activities of the Museums Branch, there is an urgent necessity for the augmentation of the staff right from the Superintending Archaeologist downward.

With a view to enforcing round-the-clock vigil at certain important monuments, the existing strength of Monument Attendants requires to be increased to at least 9,000 from the existing level of 2,700.

The Security force for looking after the security of the monuments as also of the Archaeological museums should be organized on proper lines. There should be proper provision for armed Guards for the museums and sculpture-rich monuments like Khajuraho or where sculpture-sheds exist; there should not be any monument without adequate provision of attendants.

For building up of this force, guidance may be obtained from organizations like the Central Industrial Force or the Border Security Force, etc.

Publications

Besides the existing range of publications of the Archaeological Survey of India, authoritative publications in the form of monographs should also be published on certain aspects of conservation. These could include case-histories of conservation works undertaken at important monuments. The work of preparation and publication of reports on excavations already carried out should be expedited. Suitable fellowships and other facilities should be provided to such former officers of the Survey for completing their excavation-reports.

The Universities and the State Departments of Archaeology undertaking excavations should also be asked to follow the principle of completing the report of the completed excavations before undertaking any fresh field-work. The quality of production of the excavation-reports of the State Departments and the Universities requires to be raised to international standards which could be achieved by better editing and by providing more funds and free choice of a press.

Research, Training and Establishment of the Institute of Archaeology

In view of the urgent need of undertaking multi-disciplinary studies, it is necessary that the infrastructure already available in the Archaeological Survey of India, some of the Universities and other Institutes of higher learning should be strengthened and the existing capacities enhanced.

With a view to imparting training to the various categories of staff of the Survey as also of the State Departments of Archaeology, including Diploma Course student trainees, a comprehensive training programme should be formulated and training courses held at regular intervals.

An optional paper on 'Conservation of Cultural Property' should be prescribed for students taking Diploma in Civil Engineering so that Civil Engineering students joining the Survey are properly equipped to perform their duties. Incentives by way of out-of-turn promotion or grant of increment should be given to staff members passing the Departmental Training with credit.

With a view to developing expertise in a particular field of archaeology, continued opportunites to work in the same field and utilization of the experience gained therefrom must be ensured.

Official delegation of scholars to conferences should be encouraged so as to provide opportunities for meeting with other scholars in the field and for discussing common problems.

There is a great need for the expansion of the scope and activities of the School of Archaeology. The Group, therefore, recommends the following:

(i) The Diploma course, suitably modified to incorporate some new courses, should continue. The syllabus which was set out two decades back needs recasting.

(ii) The duration of the courses should be extended from the present twelve months to two years to provide for more field training in excavation and architectural studies.

(iii) The Diploma should be recognised by the universities as equivalent to M. Phil. in the academic framework.

(iv) The existing stipend should be raised to Rs. 600/- per month.

(v) A hostel should be provided for the students and the warden, together with library facilities.

With a view to developing specialization in the Archaeology of the neighbouring countries as also to undertaking research on various aspects of

Indian Archaeology, an Institute of Archaeology should be set up at an early date. This Institute, to start with, may function as a part of the Survey, but in due course should develop as an autonomous multi-department National Institute of Archaeology. The proposed Institute should have an Advisory Council for Management.

The functions of the proposed Institute of Archaeology would be two-fold: (i) research and (ii) teaching including training. For the latter, it would take over the functions of the School of Archaeology by expanding its activities to the teaching and practice of West Asian, Central Asian and South East Asian Archaeology including undertaking of field-work. It will have eight main faculties or activities without prejudice to further development: (i) Indian Archaeology (principal faculty to include epigraphical, art-historical and architectural studies, (ii) South and South-East Asian Archaeology, (iii) West Asian and Central Asian Archaeology, (iv) Environmental Archaeology (geochronology) soil-analysis, (v) Archaeological Technology (study of metallurgy, glass, ceramics, etc.), (vi) conservation, (vii) Documentation and recording (data bank about archaeological sites, reference and study collection, archaeological photography, draftsmanship, surveying), and (viii) Underwater archaeology.

Role of Education in the Proper Upkeep of Monuments

With a view to creating an awareness among the youth as also to emphasizing the role of education in the task of preservation of cultural heritage, it is suggested that lessons on cultural heritage of the country, bringing out the importance of its preservation, should be introduced at the school and even at college stage. Mass media like Television and Radio should also be utilised to educate the people in arousing a spirit of inquiry. Films on monuments on the lines of Kenneth Clark's series on Civilization should be prepared, relating to the cultural heritage of India.

The Survey should produce popular literature on the monuments in the form of guide-books, pamphlets, picture-postcards and maps and also make available colour slides for sale at monuments.

Amateur archaeological clubs should be encouraged wherein the expertise of the archaeologists, teachers of history and architecture etc. should be made use of in organizing study tours, training camps, etc.

Indian Archaeology Abroad

With a view to widening the horizon of Indian archaeology, it is necessary that concrete measures should be taken to enhance international co-operation in this vital field. The Survey should attach young Indian scholars to foreign missions working in countries of West Asia, Central Asia, and South-East Asia with which India had cultural contacts in the past. The Cultural Exchange Programmes should be formulated with such countries to realise these objectives. Duplicates of antiquities, including pottery and other finds, should be exchanged with these countries so that a good reference collection of archaeological finds from other countries is built up, and can be used with advantage for teaching purposes at the proposed Institute of Archaeology.

Co-ordination with other Agencies

With increasing involvement of other Ministries in the working of the Survey, it is necessary that the composition of the existing Central Advisory Board of Archaeology may be reviewed. It should be ensured that the Board must meet once a year; perhaps a fixed month can be indicated for this.

purpose. With a view to ensuring a close liaison between the functioning of the Survey and that of State Departments of Archaeology, the Director General may periodically convene a meeting of the State Directors of Archaeology to discuss common problems.

For pursuing analytical techniques in multi-disciplinary studies, close liaison should be established with various national laboratories.

A committee of the Secretaries of four involved Ministries — Ministry of Human Resource Development, Ministry of Works and Housing, Ministry of Tourism, and Ministry of Environment — should be constituted wherein problems of common interest like air and water pollution to the monuments, area development, land use plan around monuments, and development of tourist facilities are discussed and decided upon.

Administrative Structure

Taking into consideration the multifarious functions and the larger responsibilities devolving on the Director General, Archaeological Survey of India, it is felt that the status of the Director General, Archaeological Survey of India, should be raised to that of an Additional Secretary to the Government of India.

The existing four-tier hierarchy at the Headquarters should be changed to a three-tier one with Director General, Additional Director General and Joint Director General. The present designation of Directors should be changed to Joint Directors General and that of the Superintending Archaeologists in the Circles to Directors. The corresponding changes in other designations as considered necessary may also be made.

With a view to building up expertise, it is necessary that lateral induction in the rank of Survey's staff is provided for but it should be confined to the level of existing Superintending Archaeologist, the designation of which is now proposed to be changed to Director.

With a view to strengthening the Conservation Wing at the Headquarters, two posts of Superintending Archaeological Engineers and two posts of Estimators should be created.

In view of the varied functions of the Survey, there is an urgent need for the post of Public Relations Officer at the Headquarters. With a view to ensuring that properly qualified staff is recruited expeditiously to the various non-gazetted cadres of the Survey, it is felt necessary that the mode of recruitment should be reviewed and if possible could be made through open advertisement and Employment Exchange, etc.

It is high time that the century-old Archaeological Survey of India with a distinctive record of achievements should have a building of its own. Equally urgent is the proper housing of the Library which at present is in a very bad shape.

For achieving better efficiency and proper conservation, the existing number of Circles should be raised to eighteen.

Considering the nature of duties and responsibilities of the Circle Officers, it is necessary that they should be given training in administration and office management during their probationary period.

Considering the responsibilities and the tasks assigned, the staff executing conservation work in the field offices should be increased. There should be a special project staff and this should be sanctioned.

Circles should have at least twelve sub-Circles with an average of 20 monuments in each. Adequate clerical assistance should be provided to the conservation staff.

The pay-scales of the conservation staff in the Survey should be made more attractive so that qualified persons are recruited for the job and the expertise once developed is retained in the Survey. In view of the comparative lesser promotional avenues in the various cadres of the Survey, it would be necessary that the pay-scales at the entry point should be at least Rs. 550-900. This recommendation is applicable to all Branches of the Survey.

Every Circle should have a trained architect attached to it, besides a Modeller for attending to repairs to cracks and fissures in sculptures and stucco work. At the level of mason and stone-cutter, there should be a gang under each sub-Circle who would carry on the work of traditional craftsmanship. For the proper execution of works at monuments located in remote localities, adequate facilities (vehicle, residential accommodation, extra allowance/field allowance, children's education, etc.) should be provided. Additional staff should be provided to the Science Laboratory at Dehra Dun so that the functions of inspection as also of research are performed without much difficulty. Senior posts of Photographers, Surveyors, and Draftsmen should be created in each field office, special consideration being given to Excavations, Chemistry and Museum Branches.

The field staff of the Survey should be given field allowance as admissible to other organisations like the Geological Survey and the Survey of India.

With a view to increasing efficiency in the complex task of the Excavation Branches, each of these Branches should have a Deputy Superintending Archaeologist and an administrative officer. The status of the Head of the Epigraphy, Science and Conservation Branches should be raised to that of Joint Director General with provision for *in situ* promotion. The Horticulture Branch should also be headed by a full-fledged Joint Director General with at least four Superintending Horticulturists located in different regions. For each of the important sites like Khajuraho, Ajanta, Sanchi, etc., there should be a Special Officer who will co-ordinate the work of the various Branches and would also have liaison with agencies of the State Department working in the area.

The upkeep of the departmental rest-houses should be improved, and they should be made available also to the retired officers of the Survey and the University scholars.

Dr. (Smt.) Debala Mitra retired from Government service on 31st December, 1983, and Dr. M.S. Nagaraja Rao, Director of Archaeology and Museums, Government of Karnataka, took over as the Director General on 5th January, 1984, for a term of three years.

Lakshadweep

In 1984, M.C. Joshi of the Survey with the assistance of A.K. Sharma, A.K. Sinha, S.S. Saar and B.R. Rajput undertook preliminary explorations in the Lakshadweep group of islands with a view to locating the ancient remains and assessing the already known monuments and cultural relics. The following seven islands, out of twenty-seven, were explored: Amini, Androth, Cheriyam, Kadmat, Kalpeni, Kavaratti and Minicoy.

As a result of the exploration of these sites, structural remains, tanks or *kulam* including rock-cut types, were located at Androth, Amini, Kavaratti Kalpeni, Cheriyam and Minicoy. Significant amongst the explored sites was one at Androth showing at least two phases of occupation in an exposed section with a gap indicated by a sand deposit and an ancient structure at the

top, besides a small tank in the uninhabited island of Cheriyam which suggested its occupation in the past. Mosques known as Mohiu'd-Din-Palli at Kalpeni and Prot-Palli at Kavaratti were found to have been raised on pre-Islamic structural remains. Another important discovery was that of a head of sculpture made of pounded coral stone (stucco) and plaster like the Buddha images found at Androth earlier and the remains of a wall of coral blocks, which seems to be an embankment, possibly raised to check the sea-waves at Minicoy island. Pottery, mainly found at Amini, Androth and Kalpeni, which was probably imported from outside, consisted of small red ware sherds.

The mosque architecture of the Island bore an imprint of older temple plans in more than one respect, viz., (i) existence of single *mehrab* in the back wall of the innermost chamber with a circumambulatory passage, (ii) one or more frontal compartment or verandah on the east and (iii) presence of basal mouldings on the exterior in some cases. Majority of the mosques (*pallis*) have attached tanks or *kulams* but they have no fixed location as some of them were on the east while others were on the sides. In certain instances, there were more than one tank around a *palli* or mosque. Unlike most of the mosques in upper India, the additions and extensions to mosques in Lakshadweep Islands were made generally only on the east and not on the sides. Some of the mosques preserved excellent specimens of woodwork and traces of fine calligraphy of later dates. The tanks which were generally square and rectangular in some cases showed several interesting designs. Outside most of the old mosques were found groups of graves of which a few were dated in the first half of the seventeenth century A.D.

Transplantation of Temples

A singular enterprise of the Survey under Dr. I.K. Sarma was the wholesale transplantation of twenty-four temples miles away and almost intact, to save them from submersion behind the Srisailam Dam under construction across the Krishna river in Andhra Pradesh. The shrines were first dismantled layer by layer, numbered, and reconstructed at sites six to twelve kms. away. The stone structures, as high as twenty-four feet in some cases, were lifted by cranes or with the help of heavy chains and pulleys after having been deftly loosened at the joints by skilled artisans. This is the first achievement of its kind in the country, in the sense that except for the land on which the temples stood, nothing was altered.

Archaeological Policy for SAARC Nations

The process for evolving a common archaeological policy for the South Asian Association for Regional Co-operation had been initiated at the first South Asian Archaeological Congress in January, 1986. The conference was attended by delegates from Pakistan, Bangladesh, Sri Lanka, Nepal, Bhutan and India. It is hoped that the SAARC countries will evolve a common code to prevent their cultural heritage from being denuded.

R.C. Tripathi, Joint Secretary, Department of Culture, Government of India, held charge of the post of Director General from 5th January, 1987, to 15th November, 1987, and Jagat Pati Joshi, Additional Director General, took over as the Director General on 16th November, 1987. Shortly afterwards, a Regional Workshop on monuments and sites was held in New Delhi and an exhibition on monuments and sites inscribed on World Heritage List was organized.

River Dams threaten Prehistoric Sites

It is feared that some of India's richest prehistoric sites and oldest fossils will go under water when the proposed dams on the Narmada river are completed. Under the Narmada River Valley Project, two large dams will be constructed across the river, the Narmadasagar in Madhya Pradesh and the Sardar Sarovar in Gujarat. According to the Archaeological Survey of India's studies, the dams will make river water rise and submerge about 90,000 hectares of land in Madhya Pradesh.

The oldest fossils and prehistoric implements discovered in India come from this region. Over the years, many archaeological teams exploring the area have found hundreds of fossils of now extinct animals and Stone Age implements fashioned by prehistoric human ancestors. In 1982, a senior geologist with the Geological Survey of India, Arun Sonakia, discovered a 1,50,000 year old skull, the oldest human skull ever found on the Indian sub-continent, lying partially exposed on the river bank near Hoshangabad (Madhya Pradesh).

The Survey has begun exploring for excavation three districts in Madhya Pradesh to look for both existing monuments and potential sites which might lie in the submergence area.

This project will help archaeologists identify sites which will be affected by the rising river waters and draw an action plan to explore in detail unexcavated sites and translocate any important monuments which lie in the submergence zone.

The Survey's team has been working in District Khandwa and the Madhya Pradesh Directorate of Archaeology teams have been surveying the sub-mergence areas in Districts of Hoshangabad and Dewas.

The Narmada region falls under the Tropic of Cancer and marks the boundary between the tropical and sub-temperate zones. Geologists think that it must have been an area of mixed forests in earlier times. It is precisely in such regions that prehistoric humans were able to hunt and thrive. Ancient mixed forests around the world are rich in fossils, human remains and artefacts. Archaeologists exploring the river valley have found Stone Age axes, cleavers and choppers, most of them between 200,000 to 300,000 years old, but a few as ancient as 500,000 years.

'These are rare implements,' according to Dr. A.P. Khatri, an anthropologist who has spent 17 years walking along the river gorge hunting for fossils and implements. According to Dr. K.D. Banerjee, some of the Palaeolithic sites along the river where these implements were found will be submerged.

Fossil hunters have traced out remains of prehistoric animals resembling the hippopotamus and the rhinoceros. Dr. Khatri, during one of his treks, stumbled upon the fossilised tusks of a 500,000 year-old elephant-like species called Stageddon.

The Survey's project now under way will take about six months to complete and help archaeologists decide whether any sites need further excavation and any monuments need to be shifted to a non-submergence zone.

Translocating monuments stone-by-stone from the zone of submergence to other sites is one way of saving for posterity the archaeological structures. The Survey would like to save the maximum possible monuments. It will be at least ten years before the waters start rising but it will not be possible to dig out all fossils which might remain hidden underground.

Thanesar

An ancient mound at the site of King Harsh Vardhana's sixth century capital of Thanesar, District Kuruksheta, Haryana, could provide clues to the life and culture of people nearly two thousand years ago or perhaps even earlier. Preliminary surface explorations by the Survey have yielded Painted Grey Ware.

Harsh-ka-Tila, the site where the mound has been located, was connected with King Harsh Vardhana, who ruled between A.D. 606 and 647. Thanesar was his capital before he shifted it to Kannauj. According to Jagat Pati Joshi, the excavations had led to the unearthing of evidence of successive occupation for more than 2,000 years. This fact is also evident from the height of the mound, which measured nearly 25 metres, standing out prominently against the surrounding plains. The mound is 900 metres long from north to south and 600 metres from east to west.

The excavations so far, including the remains of towns of the pre-Mughal and Sultanate periods, were valuable and interesting. Finds are marked by structures in which bricks of bigger sizes have been used, in contrast to those used in later buildings. In some houses and in hall-like buildings, hearths, ovens of a variety of shapes and sizes, "tandoors," storage bins, staircases and pillar bases have been unearthed.

Remains of walls made of burnt bricks of varying sizes, forming part of dwelling units or other structures, comprising the rooms, portions of paved streets and floors, an arched structure and what might perhaps have been some kind of a smithy or workshop, all belonging to the Mughal and later Mughal period, were of great interest.

According to B.M. Pande, 'The use of lime-plaster and lime-mortar was a marked feature of some buildings of the Mughal and later Mughal periods. The circular bastion, which had been partially exposed on the northern slopes of the mound, was perhaps an integral part of the rampart enclosing the town. A variety of objects of day-to-day use as well as those used on specific occasions or for a special purpose had also been found. Pottery from the site was in a variety of shapes, forms and wares. The glazed pottery, Chinese porcelain and the fine distinct Mughal pottery, with a very fine finish, and moulded and stamped pottery of the earlier period exhibited good craftsmanship. The site was also a treasure trove of coins. One of the coins, found from the dig dated to the period of the Mughal Emperor, Shah Alam II, was issued from the Delhi mint. Even coins belonging to the East India Company and those of somewhat later date have also been found.'

A copper signet ring and a circular terracotta seal, both containing inscriptions in Persian, copper antimony rods, pints, gold nose ring, iron spade, nails and goldsmith moulds are some of the other unearthed objects. Human and animal figurines, small-sized balls, oblong dice, dabbers — all of terracotta — shell, bone and ivory bangles and bracelets provided interesting evidence of the material culture of ancient times.

Buried Art in Chhatisgarh (Madhya Pradesh)

A treasure of ancient art and sculpture is believed to be lying buried in the Chhatisgarh region, which has witnessed the rise and fall of many kingdoms. A large number of ancient temples, from Banbarad in Durg district, Bhoram Deo temple and the famous brick temple, Laxman Mandir at Sirpur, in Raipur district and a large number of temples and forts, or rather what remains of them, are well-preserved. Excavations in the past have thrown light on a large Buddhist monastery as also many antiquities.

The village Tala has two temples — Deorani and Jethani temples. In Deorani temple has been found a 9 feet-tall image of Rudra Siva of unparalleled iconographic features. The image, weighing five tonnes, is believed to be about 1,500 years old. The image is nude with an erect *membrum virile*. Its headgear, halo, waistband, generative organ and nails of hand are shaped like snakes, its earlobes and earrings like descending lizard with outspread legs. Heads of crocodiles, demons, dwarfs and lions are carved on its shoulders, chest, abdomen, legs and even eyelids while its testicles are shaped like bells or legs of tortoise.

The unusual features of the iconographic ambivalence of its different members have been described as unprecedented in the history of Indian and world art. B.K. Chakravarty tentatively described the image as a likely variant of Lord Siva with probable associations with Lakulisa cult. However, in view of its position and its fair state of preservation, he was not certain as to in which of the two temples (Deorani or Jethani) was it originally situated and worshipped. Apart from this image, a massive sculpture of Ganesa holding one of its own tusks which he has torn off from its socket and is ready to hurl at the moon, has been found in one of the trenches cleared by the team. The tall foundation of the temple has also been brought out. The clearance of the adjacent Deorani temple has revealed the foundations of a massive stone temple with three gates, enormous carved architraves and colossal images.

Studied with other unsurveyed Dakshin Kosala sites, this sixth century site should, according to Chakravarty, open up a glorious epoch in the early history of Dakshin Kosala art and demolish earlier notions of its being on the periphery of the mainstream of Indian art history.

The team, comprising G.L. Raikwar and Rahul Singh along with Chakravarty, has been working at Deepadih village in Surguja district in an undulating block of hilly terrain surrounded by the hills of Kusmi and Jokapat at the confluence of the Kanhar and Malkula rivers at a height of about 2,700 feet from sea level. Preliminary clearance work has produced astounding results. They have not only found ruins of a large number of temples but have also discovered sculptural and architectural fragments of great beauty and importance which had been used by the residents of the area for lining, reinforcing and fencing on their houses, wells and even vegetable gardens.

The largest cluster of artefacts found so far is at the sal grove, locally known as Samant Sarni. The grove is strewn with sculptures of Lord Siva and his pantheon. Siva is usually shown in extreme flexion, adorned with garlands of snakes or skulls and holding the trident, liquor bowl or a staff crowned with a skull.

Siva's consort is shown as Mahishasuramardini. While she is trampling the demon Mahishasur under her feet, her mount, the lion, is shown tearing the hindquarters of the demon with its jaws. She is also shown as the terrible Chamunda with narrow and elongated breasts and sunken stomach.

At Uraon Tila, one of the 11 mounds proposed to be cleared at Deepadih, has been unearthed a near-complete structure of a temple. The doors of the inner sanctum of the temple are framed with coils of Nagapurushas and Vidyadharas. These are framed by river-goddesses holding pitchers of flower-stalks. In the front is a multi-pillared *mandap* or the assembly hall. In this site extending over two to three km. are numerous temples having superstructures of three successive storeys of *chaitya* windows.

Work in Jammu and Kashmir

Historical monuments in Jammu and Kashmir that were once lying

almost as mounds of rubble have been resurrected and preserved for posterity. This stupendous task has been performed by experts of the Survey under the direction of R.C. Agrawal.

The monuments that have been preserved include temples in Kiramchi village, situated north-east of Jammu, about 10 km. from Udhampur. There are no contemporary historical records on these temples, but on the basis of their architectural style, they have been dated to 10th-11th century A.D. The Buddhist monasteries in Ladakh region are undergoing major conservation. The team is presently excavating a colossal stupa at Tisseru. Located at Shestang village about 3 km. north of Leh city and belonging to 16th century A.D., the stupa is like a mule-shaped yellow rock.

The stupa is more than 25 metres in height and is built of a number of terraces. The lowest terrace is circular with a circumstance of 174.74 metres.

Another major work being executed is at Parihaspura in Baramulla district. Here the remains of Buddhist structures that are now being preserved and resurrected were once lying in a dilapidated condition.

The Parihaspura monuments comprise a Raj Vihara or royal monastery and a stupa. The structures possess some of the most massive blocks of stone that have been used in ancient Kashmiri temples and can be compared to those used in ancient Egyptian buildings. The stones here weigh from 3 tonnes to 20 tonnes and are lifted with the help of chain pulleys and fixed in their original position.

Some of the other major works being carried out are at Naranag temples near Kangan in Srinagar district — an important place of pilgrimage — and at the temples of Avantipur.

Conservation work has also been recently initiated at the Sun Temple, Martand, near Mattan in Anantnag district. To give it a facelift, miniature shrines, apron and the porch of the temple are being repaired. This temple has been proposed by the Union Government for inclusion in the World Heritage List.

One of the major factors in the growth of archaeology within the Survey, the prime institution dealing with archaeological researches, services and preservation of monuments and allied disciplines has been its own system of training and expertise based on intense internal experience and study. Sir John Marshall had successfully given it a concrete shape specially in regard to the training of the technical personnel. Normally an archaeological officer who belonged to an area was initially asked to specialize in the archaeology of the other regions under a superior officer, so that he could gradually develop an objective and broader outlook besides being in a position to share the knowledge and experience of his senior colleagues. On account of this specific feature of the Survey, it was possible even for less qualified persons to develop expertise in those areas which they had not studied initially. This particularly applied to the field of conservation undertaken by those who specialized either in history or in one of the classical languages. One of the best conservationists of the Survey was Pandit Madho Sarup Vats who had started his career as a Pandit in the Survey. There are many more examples. This specific trait of the Survey was also noticed by Sir Mortimer Wheeler as soon as he joined and in one of his memoranda, he writes that in India the real education as an archaeologist begins when a fresher joins the Survey. The subjects of art, architecture and epigraphy did not receive proper attention under Wheeler and this was made up by A. Ghosh with great efforts.

Consequent upon superannuation from Government service of Jagat Pati

Joshi, M.C. Joshi, an eminent specialist in historical archaeology and in the field of art and architecture besides many other related subjects, took over as the Director General, Archaeological Survey of India, on 1st August, 1990. Presently Dr. A.K.M. Shamsul Alam is the Director of Archaeology and Museums, Bangladesh, Dhaka, while Dr. Ahmad Nabi Khan is the Director of Archaeology and Museums, Pakistan, Karachi. Some of Dr. Khan's chief contributions include *Iran and Pakistan: The story of cultural relationship through the ages* (1971), *Buddhist Art and Architecture in Pakistan* (1978), *Proceedings of the First International Symposium on Mohen-jo-daro* (1975), *Uchchh: History and Architecture* (1980), *Maryam Zamagi Mosque: History and Architecture* (1972), *Early Muslim Architecture of Pakistan, and Multan: History and Architecture* (1983).

Manipur

In 1991, A.K. Sharma has discovered at Sekta, District Imphal, Manipur, urn-burials of seven periods, the earliest of these dating back to the first-second century B.C. Inside the urns, mostly hand-made pots, human skulls or other fragmentary bones along with beads, bangles, iron objects, etc., have been found. From the lowest level, wheel-made pottery was also discovered.

Highlights of Indian Archaeology

For nearly fifty years after the discovery by R.B. Foote of the first palaeolith in the Madras area in 1863, the interest of archaeologists in India was centred on the collection of variety of prehistoric artefacts for museums without any regard to their value as a means of understanding Early Man's life. No attention, therefore, was paid to the associated geological material which could have been useful for reconstructing Early Man's environment.

To this end in 1930, a beginning was made by Cammiade and Burkitt who studied the palaeolithic collection made by the former and tried by typological studies to build up a cultural sequence of the miscellaneous artefacts obtained from Andhra Pradesh. They also suggested the climatic events of the period in which these tools were manufactured by prehistoric man.

De Terra's Expedition and Subsequent Prehistoric Activity

But the real foundation for scientific studies of prehistory of India was laid by De Terra and Paterson in 1935 by systematic geologic, geomorphological and Stone Age cultural studies in Kashmir and Potwar Plateau. Their work in the Kashmir valley established the Pleistocene sequence of four glacials and three interglacial stages comparable to such events in Europe. In the Soan river, a tributary of the Indus (now in Pakistan), De Terra discovered a series of five river terraces and associated with them were found a succession of palaeolithic industries called the Soan industry of unifacially and bifacially worked choppers on pebbles. Flakes showing a gradual development from cruder (Clacton-type) to evolved forms (Levalloisian type) were also associated with them. Hand-axe industries were also found on the Soan terraces. To them also goes the credit for the discovery of the neolithic site of Burzahom where

they undertook a trial trench to know the character of the site which yielded black polished ware with incised designs besides bone and stone tools. De Terra and party also paid brief visits to the Narmada river and the Madras area and worked out stratigraphic and cultural sequences of the respective regions.

The lead given by De Terra was followed by N.K. Bose and D. Sen of Calcutta University who started explorations in the Mayurbhanj area of Orissa State and by H.D. Sankalia in Gujarat when a significant contribution was made to Indian Prehistory with the finding of several Stone Age sites in the respective areas. F.E. Zeuner then gave a fresh impetus by introducing a new scientific approach of soil studies and interpretation of past climatic events (geochronology). B.B. Lal discovered a high-level terrace sequence and Palaeolithic (Soan type) cultures in the Banganga river in Himachal Pradesh. He also excavated the microlithic site at Birbhanpur on the Damodar river in West Bengal.

Later several students of the Deccan College, Pune, under the leadership of H.D. Sankalia, conducted regional studies of palaeolithic industries and concerned stratigraphy all over India. Sankalia himself made the important discoveries of Middle Stone Age industries in 1956 in Maharashtra and Early Stone Age industries in Kashmir in 1969. His students discovered the Upper Palaeolithic cultures in Andhra Pradesh. The Chemistry Branch of the Archaeological Survey of India and the Departments of Archaeology of Baroda University and the Deccan College also carried out laboratory investigations for prehistoric environmental studies.

The excavations of palaeolithic sites were undertaken by the Deccan College at Chirki on the Pravara river; and at Mahadeo Piparia as well as near Maheshwar on the Narmada river for locating the layout of the prehistoric habitation and factory or workshop sites. Besides, the sites of Patne (Maharashtra) and Bhimbetka (Madhya Pradesh) were excavated by his students.

The Prehistory Branch of the Archaeological Survey of India under R.V. Joshi conducted Pleistocene glacial studies in the Kangra valley as well as in the Kashmir basin, the excavations of a palaeolithic site at the Adamgarh rock-shelter near Hoshangabad on the Narmada, in Billa Surgam caves in the Kurnool District of Andhra Pradesh and the caves at Pachad and Hathikhamba in Konkan (Maharashtra), open-air sites at Sakri near Dhulia and carried out extensive explorations in Madhya Pradesh and Karnataka.

The most important contribution to Palaeoclimatic studies came from R.V. Joshi and later his colleagues in the Deccan College about the Pleistocene glacial sequence in the Kashmir valley. As against two or three glacial stages earlier observed by De Terra, the recent study in the Liddar river has revealed the presence of only one glacial activity near Pahalgam at an altitude of 2300 m. The terraces in the Kangra valley are considered by R.V. Joshi as due to huge cone formations of fluvio-glacial deposits and they are not directly connected with glaciation. He has also made the first discovery of the hand-axe industry in the sub-Himalayan area. He has suggested that in monsoonal India, the glaciations in the higher altitudes can only be equated with the dry periods in peninsular India.

K.D. Banerjee of the same Branch explored the eastern coast and conducted excavations of palaeolithic sites at Nagarjunakonda, Gudiyam cave and Vadamadurai near Madras. B.P. Bopardikar of the Prehistory Branch explored the NEFA area.

Pleistocene eustatic studies on the west-coast region were undertaken by S.N. Rajaguru, R.V. Joshi, Statira Guzder, D.P. Agrawal and others. Similar

palaeoclimatic investigations in the river valley were pursued at the Deccan College, Poona, for understanding past environments.

Radio-carbon dates of Pleistocene events are now available from Mula river (30,000 Before Present for Middle Palaeolithic), Adamgarh (5,000 Before Present for Mesolithic) and several dates ranging from 2,000 Before Present to 30,000 Before Present of coastal deposits for establishing fluctuations of the sea-level during Pleistocene.

In 1972, the University Grants Commission gave special assistance to the Archaeology Department of the Deccan College, Pune, for creating posts of Professor of Prehistory, which incidentally is the first such post in an Indian University, and Lecturers in Prehistory, Palaeontology and Ethno-archaeology. With this additional staff, the College became a leading centre for prehistoric studies in India. The Institute of Archaeology, Archaeological Survey of India, has already included a course in prehistory and allied environmental studies in its curriculum. There is thus an all round activity in Prehistory in the field and laboratory studies as well as in the teaching of this subject.

Renewed Work on the Indus Civilization

About seventy years ago, archaeological operations in the Indus Valley of India, now in Pakistan, revealed at the ancient sites of Mohen-jo-daro and Harappa, a new culture which is presently known as the Indus or Harappan Culture. The name Indus Civilization has now become a misnomer as a large number of ancient sites relating to this culture are located outside the valley of the Indus. Now it is being increasingly called Harappan Culture after the type-site. Mohen-jo-daro (meaning: the mound of the dead) lies in the Larkana district of Sind (Pakistan) on the right bank of the Indus and Harappa is situated in the Montgomery district of West Punjab (Pakistan) on an old bed of the Ravi. Ever since the discoveries of the new culture, more sites of the same cultural affinity have been located in the subcontinent over a wide area. It is now known that the domain of this civilization was considerably larger than that of ancient Egypt or Mesopotamia, to which it was in part contemporaneous. The Harappans had cultural contacts through the Persian Gulf with Mesopotamia and with settlements further west, besides with the regions to their north and east. Perhaps, primarily, these contacts were of a commercial nature.

The excavations at Harappa and Mohen-jo-daro added a new chapter to the history of India. Referring to the excavations carried out at Mohen-jo-daro, Sir John Marshall said:

The excavations at Harappa and Mohen-jo-daro added a new chapter to and second) millennia B.C., in possession of a highly developed culture in which no vestige of Indo-Aryan influence is to be found. Like the rest of Western Asia, the Indus country is still in the Chalcolithic Age — that age in which arms and utensils of stone continue to be used side by side with those of copper or bronze. Their society is organized in cities, their wealth derived mainly from agriculture and trade, which appears to have extended far and wide in all directions. They cultivate wheat and barley as well as the date-palm. They have domesticated the humped zebu, buffalo and short-horned bull, besides the sheep, pig, dog, elephant and camel; but the cat and probably the horse are unknown to them. For transport they have wheeled vehicles, to which oxen were yoked. They are skilful metal workers with a plentiful supply of gold, silver and copper. Lead and tin are in use, but the latter only as an alloy

in the making of bronze. With spinning and weaving, they are thoroughly conversant. Their weapons of war and of the chase are the bow and arrow, spear, axe, dagger and mace. The sword they have not evolved; nor is there any evidence of defensive body armour. Among other implements, hatchets, sickles, saws, chisels and razors are made of both copper and bronze; knives and celts sometimes of these metals, sometimes of chert or other hard stones. For the crushing of grain, they have the muller and saddle quern, but not the circular grind-stone. Their domestic vessels are commonly of earthenware, turned on the wheel and not infrequently painted with encaustic designs; more rarely they are of copper, bronze or silver. The ornaments of the rich are made of the precious metals or of copper sometimes overlaid with gold, or faience, ivory, carnelian and other stones; for the poor, they are usually of shell or terracotta. Figurines and toys, for which there is a wide vogue, are of terracotta, and shell and faience are freely used, as they are in Sumer and the West generally, not only for personal ornaments but for inlay work and other purposes. The Indus peoples are also familar with the invention of writing and employ for this purpose a form of script which, though peculiar to India, is evidently analogous to other contemporary scripts of Western Asia and the Nearer East.'

In the vast area in which the culture described above extended between Sutkagen-dor on the Makran coast in the west and Alamgirpur in the Yamuna Basin in District Meerut and Manda at the foothills of the Pir Panjal range in the north to Daimabad in the upper Godavari basin in the south, numerous sites have been discovered. North of the Hindu Kush, at the confluence of the Kokcha and the Amu Darya, a Harappan site has been discovered at Shortugai. The extension of the culture eastward and in particular towards the Ganga-Yamuna Doab and southward into Kutch, Saurashtra and northern Rajasthan raises various interesting possibilities. And now the discoveries of material, seemingly comparable to the Harappans, in the Chust in the Ferghana Valley of Central Asia by Soviet archaeologists have added a new facet to the problem. Surely it was the most widespread of the Bronze Age cultures of Asia.

The excavations at Harappa and Mohen-jo-daro brought to light many interesting facts including the design and lay-out of the cities with the streets and lanes cutting one another at right angles, their underground drainage system, copper/bronze objects and pottery of a very high order and an evolved script which is yet to be deciphered conclusively. The Great Bath at Mohen-jo-daro is another striking feature. It was made of polished bricks, was 39 feet (11.89 m.) long, 29 feet (8.84 m.) wide and 8 feet (2.44 m.) deep with steps leading down to the floor and with small rooms along its perimeter.

The wide straight roads dividing and sub-dividing the city in square blocks, well-planned houses and an underground system of drainage are still a model to the present-day town-planner. The inhabitants lived largely by agriculture but also maintained a trade with lands as far as Mesopotamia and northern Afghanistan.

The excavated remains have thrown a great deal of light on the life, ways, customs and the activities of the people belonging to the period. Of the early stages of this civilization, nothing was known till the excavations at Kot Diji in Upper Sind which provided important clues to this question and also brought to light remains of an earlier culture of an equally remarkable character, roughly datable from 3,000 to 2,500 B.C. It seems to have influenced different aspects of life and culture of the Indus people, though our information so far is very meagre.

N.G. Majumdar's Exploration in Sind

It will not be out of place to mention the efforts of the indefatigable archaeologist, N.G. Majumdar. In 1938, an expedition to carry out further exploration in Sind was organized to pursue further enquiries in respect to the dispersion of chalcolithic cultures in India. The leader of the expedition was Majumdar himself who unfortunately fell a prey to the nefarious activity of highwaymen in Dadu District and was brutally murdered while on duty. His archaeological reconnaissance in Sind is as important, if not more, as the discovery of Mohen-jo-daro's ancient civilization by Rakhal Das Banerjee. It was Majumdar's archaeological excursions which proved beyond doubt that the civilization of which we have such lively and abundant evidence at Mohen-jo-daro and Harappa, was not confined merely to two isolated spots but permeated the entire lower valley of the Indus and the regions to the west. His death was a great loss to the cause of archaeology in India. The other members of his team saved their lives by posing as Muslims and the highwaymen had left the place with bags full of money. One member of this team, Krishna Deva, received a bullet in his leg. He retired some years ago as Director, School of Archaeology, Archaeological Survey of India, and is an authority on North Indian temples.

It was also N.G. Majumdar who, for the first time, revealed, as early as in 1929, at Amri, District Dadu, Sind, the remains of an earlier culture under the Harappan layers which he called Amri Culture. Other stratigraphically pre-Harappan cultures were identified, for instance, at Amri IC-II B, Gumla II-III, Harappa I (pre-defence), Kot Diji I, Kalibangan I, Banawali I, and Mitathal I. The cultures known as Jalilpur II and Sarai Khola II are also comparable with the foregoing, though these two sites have not yielded any superimposed Harappan remains.

Indus Civilization in Post-Partition India

Of about seven hundred and twelve sites of Harappan culture within post-Partition India, only Ropar, Kalibangan, Lothal, Surkotada and Banawali have been extensively excavated. While Ropar has produced a very good stratigraphic sequence, from the days of the Harappan Culture up to medieval times, with, no doubt, occasional breaks in between, Kalibangan, Lothal and Surkotada have thrown fresh light on some aspects of the Harappan culture itself. The site at Alamgirpur on the Hindon, a tributary of the Yamuna, is noteworthy. Particular significance attaches to the sites of Kalibangan, in District Sriganganagar, Rajasthan, and Lothal in District Ahmedabad, Gujarat, in terms of trade and maritime activity of the Harappans, disposal of the dead and the antecedents of this culture. At Kalibangan, a cemetery was discovered to the south-west of the habitation area which proved the two methods of disposal of the dead by the Harappans: extended inhumation and ritualistic pot-burials. At Dholavira (Kutch) polished pillar base has been discovered for the first time at any Harappan site.

In general, the lay-outs of Harappa and Mohen-jo-daro are similar, having two mounds separated by a gap, a higher one towards the west and an extensive, although lower mound to the east representing the acropolis and the lower city on the west and the east, respectively. While the acropolis or the

citadel at both these sites was a parallelogram with the major axis oriented north-south, at Kalibangan it was rhomboidal in plan with a partition and enclosing mud-brick platforms. Particularly significant in these cities is the concept of town-planning with the main streets and cross-lanes forming a grid.

At Harappa, the citadel mound enclosed within the defence buildings raised upon a platform of mud and mud-brick, outside the citadel to the north were the working floors and quarters for the workmen and the granaries. However, at Mohen-jo-daro, where traces of fortifications were also recorded, on the citadel mound were the Great Bath, the Great Granary and a Pillared Hall. At Lothal, the distinct feature was the dockyard and the absence of twin mounds.

Mohen-jo-daro and Harappa have generally been hailed as cities, the twin capitals of this extensive state. Since the excavations at Mohen-jo-daro and Harappa, extensive explorations and large scale excavations have been carried out in Pakistan, e.g., at Allahdino, Amri, Gumla, Jalilpur, Jhukar, Kot Diji, Balakot, Rahman Dheri and Sarai Khola, which have materially added to our knowledge. A second series of sites may reasonably be regarded as provincial centres of government. Several among them have been excavated, one of them being Kalibangan in District Sriganganagar, Rajasthan, where B.B. Lal, B.K. Thapar and Jagat Pati Joshi of the Archaeological Survey of India have achieved technical excellence unsurpassed so far in India.

In the *Birth of Indian Civilization*, Bridget and Raymond Allchin observe:

'Our overwhelming impression is of cultural uniformity, both throughout the several centuries during which the Harappan civilization flourished and over the vast area it occupied. This uniformity is nowhere clearer than in the town-planning.'

Even three thousand years after the decline of Mohen-jo-daro, a city like London had no arrangements even for sanitation. This gives us an idea of the advanced civilization of the Indian subcontinent about five thousand years ago. F.A. Khan observes: 'Drains are hardly romantic, but those of the Indus Valley cities are among their chief glories. The system is certainly the most complete ancient system as yet discovered. A brick-lined channel flowed down every street and into this main drain ran small tributary drains from the houses on either side. The drains were covered over with bricks laid a few inches below the street level, which could be easily lifted when it became necessary to inspect or clean the channel underneath. The drain-water from the various houses was not permitted to flow into the street drain direct, but had first to enter a cess-pit in which was deposited the solid matter. When the pit was three-quarters full, the water flowed into the main drain and by this method the street drains were prevented from over-flowing.'

A similar uniformity of culture is observed in the technology of the Harappans. There were numerous highly developed arts and crafts; that of seal-cutting and the craft of bead-making, etc., deserve notice. The long barrel beads of carnelian were among the technical achievements of the Harappans. The art of shell inlay and the manufacture of objects of faience may be specially mentioned. Very few examples of stone and metal sculpture are known. Harappan technology deserves Childe's acclaim as 'technically the peer of the rest' (that is, of Egypt and Babylonia).

The genesis and the nemesis of this civilization still remain an enigma. However, the excavations at Kalibangan and Kot Diji carried out recently have brought to light the pre-Harappan (early Harappan?) remains; the archaeological work in Gujarat, in particular, has thrown light on the problem of the

merging of the Harappan culture into the succeeding cultures in the area. There is evidence of a direct cultural continuity between the pre-Harappan and Harappan periods, particularly in the Indus Valley, the Punjab and Rajasthan.

B.K. Thapar writes in his paper 'The Harappan Civilization: Some Reflections on Its Environments and Resources and Their Exploitation' in *Harappan Civilization* (ed. Gregory L. Possehl): '...Environmental factors, including the behaviour of the river, climate and accessibility of natural resources, were largely responsible for the growth into maturity and expansion of the Indus Civilization. Paradoxically, it is these very factors, in a multicausal framework, which became responsible for the weakening and ultimate collapse of the Indus Civilization. Long distance and internal trade in resource material was badly disturbed, affecting the distribution of raw materials and luxury goods, with the result that the settlements of the far-flung civilization became impoverished in cultural content. Shifts in drainage patterns occurred, resulting from extended pluviality in association with geomorphic changes, either through "westering" or through "northering." The Ghaggar-Hakra-Wahinda system disappeared due largely to the capture of the Yamuna by the Gangetic system. There was wholesale destruction of forests and intensive grazing in the Himalayan foothills. This led to erosion and to the wandering of the water channels due to the raising of their beds through the deposition of detritus. Tectonic disturbances (1) made the Indus prone to frequent flooding, resulting in the ponding of some parts and consequent rise of the water table in the area, and (2) disrupted the Ghaggar-Nara flow channel, as is evident by the reverse gradient of the river near Manot, resulting in reduction in the supply of water. Eustatic phenomena (coastal uplifts or marine regressions) took place along the northern margin of the Arabian Sea with the result that, (1) some of the old ports, both on the Makran and Kutch-Kathiawad coasts, were left several kilometres inland, and lost their trading role, and (2) the water table receded on inland sites, leading to a decline in civic standards. In the context of environmental syndromes, it would be seen that the phenomena of eustasy, pluviality and aridity produced different reactions in the different physiographic regions, which would perhaps explain the survival and variability of the Indus Civilization in regions like Gujarat, Haryana, the Punjab and contiguous areas of Uttar Pradesh during the first half of the second millennium B.C.'

There is the problem of the decipherment of the Harappan script, examples of which are found in a variety of objects such as seals and sealings of steatite, faience and terracotta, copper tables, potsherds, metal objects and vessels, ivory rods and in a few cases even of stone. Indian, Russian and Finnish scholars and others have been working on the decipherment.

Certain scholars have traced the non-and un-Indian origins of the script and tried to decipher it on the basis of extra-Indian parallels; there have been some scholars who have tried to read some early Indian language. B.M. Pande writes: 'Now the controversy is mainly about its connections with either the Early Dravidian or Indo-Aryan languages. The primary need, however, is an analysis of the nature of the script and to ascertain the evolution of the script.'

Professor B.B. Lal in his paper *Has the Indus script been deciphered?* read at the 29th International Congress of Orientalists, Paris, July 16-22, 1973, comes to the conclusion that this script has not been deciphered so far conclusively, though both I. Mahadevan who was awarded the Jawaharlal Nehru Fellowship for working on the Indus script and S.R. Rao claim that eminent scholars outside India have accepted their respective views. Earlier, at the 28th International Congress of Orientalists, held at Canberra in 1971, Lal had

already demonstrated that as there were several basic flaws and inconsistencies in the approach of the Finnish scholars, the results were naturally wrong and hence unacceptable. The scholars present on the occasion had agreed with this assessment of Lal.

Many traits of Harappan culture appear to anticipate features of the religion of Vedic times or later Hinduism. Motifs like the *pipal* leaf or the *Swastika* were already of religious significance for the Harappans. According to Bridget and Raymond Allchin: 'There is a suggestion of a religion dominated by one great God, who convincingly shares many of the traits of the later Siva, being a Yogi, a Lord of Beasts, whose cult was associated with fertility and the *lingam,* and who in later times had the epithet Mahadeva (Great God) and by a great Mother who equally shares traits of Parvati, the spouse of Siva known also as Mother and Devi, the Goddess. There is an indication of the cult of trees or tree-spirits and of the special significance of various animals. All in all, we are left with a very clear sense at least of elements of the Harappan religion and we cannot fail to see in them much that continues in subsequent Hinduism.'

According to C-14 determination by Dr. D.P. Agrawal, the timespread for the nuclear Harappa is C. 2300-2000 B.C. and for the peripheral regions C. 2200-1700 B.C. with a possibility of later extension.

In terms of the recommendations made at the International Symposium on Indus Civilization, held at Karachi from 30th December, 1978 to 3rd January, 1979, and the agreement signed between UNESCO and Pakistan National Commission for UNESCO, the Centre for the Study of the Civilizations of Central Asia, Quaid-i-Azam University, Islamabad, organised the meeting of the Steering Committee on the preparation of a book on Indus Civilization from 3rd May to 5th May, 1980, at Islamabad. A well-documented illustrated book entitled 'The Indus Civilization' is planned to be written with contributions from several eminent archaeologists of the world. The objective will be to tell the whole story of the Civilization in all its aspects as it was discovered and as it spread in the different geographic areas, developed and flourished under different impulses with the help of the technology of the time by the people who had the genius to profit by the available resources and ultimately face the brunt of the new changes that brought about the end of the Civilization. This first experiment in urbanisation in South Asia left a vast legacy to those who succeeded the builders of this Civilization in the other areas of the world. While the Indus people had contacts and trade relations with them, they had their own individuality and originality based on the Indus pattern. It is the nature of this unique pattern that is sought to be presented in 'The Indus Civilization'.

The descendants of the Mohen-jo-daro people still exist, according to two Pakistani archaeologists.

In a new book *Mohenjodaro: A 5000-year-old legacy*, Khurshid Hasan Shaikh and Syed M. Ashfaque write that the Mohana people, a minority tribe of fishermen found around the Indus, near the Mohen-jo-daro excavation sites, are the descendants of the Indus Valley Civilization.

The book, published by the United Nations Educational Scientific and Cultural Organisation (UNESCO), also disputes the interpretation of the word Mohen-jo-daro as "the mound of the dead". They say that the word Mohen-jo-daro should be taken as the "mound of the Mohana people".

The earlier "mound of the dead" meaning was adopted because in Sindhi language "moen" meant "the dead". Correspondingly the official Pakistani spelling was changed in 1960 to "Moen-jo-daro".

The two Pakistani scholars advance many points in support of their

'Mohana People' theory. They speak vernacular Sindhi with many peculiar words. The scholars also note some cultural traits for the Mohana people which set them apart from the rest of the rural population in the area.

The Mohana people earn their livelihood by fishing, rowing boats as village ferrymen and hunting water fowls during the rainy season. They float around in flat bottomed boats over the Indus river stretch from Sukkur to Manchar lake.

The Mohana boatmen still hold an annual festival at the Indus river point just opposite the Mohen-jo-daro excavation site. Their songs, dances, boat-racing and long distance swimming competitions at the festival are reminiscent of the seafaring expertise of the original Mohen-jo-daro people, the scholars say.

The name Mohana also has some affinity with "melluha", the Mesopotamian name for the Indus Valley Civilization empire, they say. The flat bottomed sail crafts of the Mohana boatmen resemble the images of boats seen on some of the excavated Mohen-jo-daro clay seals.

The authors suggest a more detailed ethnological study of these people, especially the wood carved designs on their boats and philological study of the odd words and phrases they use in their dialect.

Based on recent Harappan sites in Baluchistan, the authors say that the "Swastika" symbol is of Indus Valley origin. Lord Siva is known to be an Indus valley deity. So are other present day religious symbols like *pipal* leaves, phallus symbol (Sivalinga) and hatched circles.

Many of the present day zodiac symbols also orginated from the crop calendar used by the Indus Valley people, the two scholars observe.

Ochre-Coloured Pottery and Copper Hoard Culture

Hoards of copper tools, commonly known as 'Copper Hoards', comprising variously ordinary, shouldered and bar-like celts, antennae swords, harpoons, spearheads, anthropomorphic figures, rings, etc., have come to light from time to time since 1822 at several sites in the Ganga Valley, and sometimes outside it. These have been dealt with, among others, by Vincent A. Smith (1905, 1907), Hiranand Shastri (1915), R. Heine-Geldern (1936, 1937, 1956), Stuart Piggott (1944, 1950), B.B. Lal (1951, 1968), G.M. Bongard Levin and D.V. Deoipik (1957), J.E. Van Lohuizzen-de Leeuw (1960), S.P. Gupta (1963, 1965), Y.D. Sharma (1964), K.N. Dikshit (1968 and 1979) and D.P. Agrawal (1971). About the cultural association of the Hoards, three major theories have been put forward, viz., that they (i) represent the traces of Vedic Aryans, (ii) were left behind by the Harappan refugees on the move in the Ganga Valley and (iii) were associated with the original inhabitants of the Valley.

There was no indication of the cultural context of the copper hoards until about twenty years ago. But largely due to the percipience of B.B. Lal, their associations had become slightly clearer by 1973. At Bisauli and Rajpur-Parsu (in Budaun and Bijnor Districts, respectively), exploration and trial excavation in the vicinity of the find-spots of hoards revealed thick, red, rolled and waterlogged pottery, nick-named 'Ochre-washed' or Ochre-coloured pottery (OCP) from its distinctive quality. Prior to the excavation at Saipai, Etawah District, Uttar Pradesh in 1970-71 by B.B. Lal and L.M. Wahal, these copper tools had never been found in a regular excavation. With this excavation for the first time, positive evidence regarding the pottery and other artefacts that

went along with the Copper Hoards of the Ganga Valley was obtained. In certain cases, e.g., at Rajpur-Parsu, Bisauli and, still notably, Bahadrabad, pottery was found in a subsequent dig, but doubts always lingered about its being really associated with the tools. During the course of this dig at Saipai, a harpoon was found at a depth of 45 cm. below the surface. Some red-ware was also found in the associated soil-deposit. Lal observes: 'Although many sherds of this pottery left an ochreous colour on the fingers at the time of handling, as was the case with the Hastinapura, Bisauli and Rajpur-Parsu fragments, it became equally clear that a good many pots had a red slip. In fact, in one case, even a painted design — criss-cross lines in black pigment — was found over the slip. The once called Ochre Colour Ware may thus have really been just a black-on-red ware, the ochreous surface of the examples found at Saipai and elsewhere being due to the pulverization of the surface through external causes.'

So far there is little evidence to assume that the Copper Hoard culture is that of Harappan refugees. As to the association of the hoards with Vedic Aryans, it has already been demonstrated by B.B. Lal (1951) that Hiene-Geldern confused the issues. He regarded the hoards, as also the fan-hilt sword from Fort Munro, the trunnion celt from Shalozan, the shaft-hole axe from Shai Tump and the adze-axe with a similar hole from Mohen-jo-daro as belonging to a single culture-complex. Then, citing parallels of these latter tools from Western Asia, and basing his argument on the probable association of the West Asian examples with the movement of the Aryans, he thought that the Copper Hoards or the hoards of copper tools also represented traces of Vedic Aryans. But the fossil-types of the hoards do not occur west of the Ganga Valley. There is thus hardly any case for saying that the Copper Hoards are associated with the fan-hilt sword, trunnion celt, etc., and hypothetically, therefore, with the Aryans. According to Lal, in the present state of our knowledge, there seems to be a much better case for assuming that these hoards belong to some people who were indigenous to the Ganga Valley and the region immediately to its south. To settle the issue beyond doubt, however, much more evidence is needed, which is just beginning to emerge.

The evidence points out that the Ochre Colour (or Saipai) Ware/Copper Hoard culture was in existence between 2000 and 1500 B.C., with a probable margin on either side. It appears that about 2000 B.C. and for some centuries thereafter, while the Harappan Culture dominated the Indus Valley and Gujarat, it was the Copper Hoard people who held sway over the Ganga Valley.

It may be noted that at the sites which have yielded the hitherto called Ochre Colour Ware, the pottery-bearing deposit, varying from 0.5 to 1. m. in thickness, does not show any floor-level nor is there any trace of charcoal, ash, etc. Only at Lal Qila was there an indication of a floor-patch having survived.

There is still much room for research on Copper Hoards which have remained, according to B.K. Thapar, 'an unsolved mystery'. He asks: 'Why were the Copper Hoards found localized at one place on a site? Is the deposition of the copper objects in hoards a normal feature in the life of the community? If so, does the findspot represent the armoury of the community or the workshop of the guild of smiths?'

Krishna Deva writes in *Puratattva*, No. 5 (New Delhi, 1971), pp. 15-16:

'From the variety of sophisticated copper tools found among the Copper Hoards, it is clear that the authors were proficient in smelting copper and fashioned them in a number of sophisticated shapes, like shouldered celt, harpoon, antennae sword, and anthropomorph. Their pottery also shows a fair

variety of types and frequent use of incised and, in rare cases, even simple painted designs. The fabric is medium to thin and much of the pottery originally was slipped. Owing to these sites being subjected to frequent flooding, the pottery not only lost its slip but also became friable and brittle. This is the result obviously of water-logging and not of indifferent firing or lack of potter's skill. A people who knew the technique of smelting copper at a high temperature certainly should have known how to fire pottery properly.'

M.C. Joshi has observed in *Puratattva*, No. 5. (New Delhi, 1971-72), p. 13:

'The Copper Hoard implements of Western Uttar Pradesh sites should be associated with OCP or other red wares with great caution, particularly in view of the highly refined cast tools, indicating complicated copper technology. In the light of such tools, the standard of economy reflected in excavated material from the sites appears to be very poor, indicating semi-hunting pastoral economy. How could the people, who prepared such fine implements, have such an ordinary culture? I, therefore, feel that either these tools have no connection with the OCP or similar other cultures, or else they belong to an earlier Copper-Bronze Age Culture.'

Painted Grey Ware Culture

After the Copper Hoards in the Ganga-Yamuna Valley, we come across the Painted Grey Ware Culture, which has broadly been dated to the first half of the first millennium B.C., with a probable margin on the earlier side. The earliest Carbon-14 date for this Ware comes from Atranjikhera in Uttar Pradesh. It is 1025±110B.C. However, below the layer which yielded this sample, there was a further deposit of 1.40 metres associated with the Painted Grey Ware Culture. At Ropar and Alamgirpur, it has been found to post-date the Harappan Culture, while at Hastinapur it post-dated the Ochre Colour Ware and ante-dated the Northern Black Polished Ware of the second half of the first millennium B.C. At Bhagwanpura, however, it was clearly noticed for the first time that there was an overlap of late Harappan and Painted Grey Ware.

The distinctive features of this latter Ware are the superior quality of the paste formed of well-levigated clay and fine thin well-burnt fabric achieved with an equally distributed heat in the kiln and a smooth grey surface, ranging in colour from ash grey to battleship-grey and sometimes buff-grey. Associated and coeval with it is a brownish red ware with a grey of buff core. The types represented are mainly straight-sided bowls, cups and dishes with incurved edges and a sagger or convex base. On the grey surface of the body are painted linear and dotted patterns in black, executed before firing. Instances of red-on-grey, black-on-black and bichrome painted designs are met with. Sometimes the designs are executed in deep chocolate or black of an unequal tone on a yellow or pale red ground.

The Painted Grey Ware people lived in houses which apparently had mud floors and were constructed of wattle and daub upon a wooden frame. They carried on agriculture and domesticated animals, amongst which particular mention may be made of the horse. In the beginning, they seem to have used only copper, but later they did start using iron.

According to B.B. Lal: 'At Hastinapura, the Painted Grey Ware settlement came to an end as a result of a devastating flood in the Ganga, on whose bank it stands, and the archaeological evidence seems to affirm the Puranic (legend)

regarding the washing away of Hastinapura by a flood and the subsequent shifting of the capital to Kausambi. Though definitive proof is still lacking, circumstantial evidence seems to suggest a correlation of the Painted Grey Ware Culture with the Aryans, or at least a branch thereof.'

The Painted Grey Ware holds a significant position by being placed between the Harappan and the Northern Black Polished pottery, by its specialized distribution pattern within the Ganga Valley, its association with the traditional *Mahabharata* sites, such as Hastinapura, Tilpat, Ahichchhatra etc. The Painted Grey Ware promises the unfolding of an unknown facet of our culture.

This culture played an important part in the formation of the second or Gangetic civilization of India. Many of the places mentioned in the *Mahabharata* have been found to have had settlements of this period. By the end of the Painted Grey Ware period, a more or less uniform culture, whose hallmark was the black lustrous pottery known as Northern Black Polished Ware, extended from the lower Ganga to the Punjab.

This Ware represents one of the technical high watermarks of the Indian potter. It is a black gloss Ware with a surface very closely related to that of the Greek Black. There is, however, no reason to suppose that the Indian potter derived his technique from any external source.

It has been a matter of dispute whether the Aryans should be regarded as the authors of the Painted Grey Ware or not. Most Indian scholars have held that they were, but others have questioned it.

According to A. Ghosh, there can be 'no reasonable doubt in ascribing the Ware to the later Aryans, together with the vast mass of red ware associated with it; otherwise, we shall have to find some other diagnostic ware within these chronological and spatial limits.'

Chalcolithic Cultures of Central India and the Deccan

The chalcolithic age succeeded the Neolithic, retaining all the latter's features, but was marked off by the appearance of copper.

The chalcolithic cultures are characterized by the use of neoliths and microliths, copper objects and red pottery with paintings in black. These can broadly be classified into the Ahar (or Banas after the river of that name) Chalcolithic Culture, the Central Indian Chalcolithic Culture and the Deccan Chalcolithic Culture. This classification has primarily been made owing to the regional peculiarities in the Chalcolithic Cultures. The cultures were widespread from the second half of the second millennium to the first half of the first millennium B.C. R.C. Agrawala has tried to identify a separate culture at Ganeshwar and Jodhpura (C. 2800-2000 B.C.) which used to supply copper to Harappan sites while K.N. Dikshit and A.K. Sinha opine that the Ganeshwar culture did not survive in isolation but flourished along with Aharians and other indigenous people in the riverine valleys of Banas and Chambal.

The important sites representing these cultures are Ahar and Gilund (District Udaipur, Rajasthan), Ganeshwar (District Sikar, Rajasthan), Eran (District Sagar, Madhya Pradesh), Dangwada (District Ujjain, Madhya Pradesh), Inamgaon (District Pune, Maharashtra) and Navdatoli (District Nimar, West Madhya Pradesh) on the Narmada, Nevasa (District Ahmadnagar, Maharashtra), Chandoli (District Pune, Maharashtra), Brahmagiri (District Chitradurg, Karnataka) and Maski (District Raichur, Karnataka).

Central India was a *terra incognita* prior to the fifties in so far as protohistoric archaeology was concerned. But thereafter, a large number of sites, some dating back to the first quarter of the second millennium B.C., have come to light. Excavations were undertaken at quite a few of these sites, for example, Awra, Nagda on the Chambal, Eran, Tripuri, Navdatoli on the Narmada, etc., revealing a chalcolithic culture characterized by microliths, copper axes and black-on-red pottery known as the Malwa Ware.

'Basing his arguments on the possible similarity of some of the more outstanding shapes, e.g., the stemmed chalice, channel-spouted bowl, etc., in this Ware with their counterparts in Iran,' remarks B.B. Lal, 'the excavator of Navdatoli is inclined to see in them an influx of the Indo-Aryans. May it, however, be observed that none of these chalcolithic sites has so far yielded the remains of the horse — an animal invariably associated with the Indo-Aryans.

Prakash and Bahal on the Tapi have yielded useful evidence regarding chalcolithic and subsequent early historical cultures.

A variant chalcolithic culture has been encountered in the northern Deccan, the more noteworthy sites being Nasik, Nevasa, Jorwe, Daimabad, Chandoli, Inamgaon etc. This culture is later than the Central Indian Chalcolithic Culture by about three centuries. This Northern Deccan Chalcolithic Culture is characterized, besides microliths and copper tools, by a matt-surfaced black-on-red pottery known as Jorwe Ware, occasionally polished stone axes and the practice of urn-burials, the last two traits having been obtained perhaps as a result of contact with its southern neighbour, viz., the Southern Neolithic Culture. A noteworthy feature of these cultures was the method of burial whereby fractional skeletal remains were deposited into the urns. The system of extended burial was also known.

The earliest (thirteenth century B.C.) examples of raw silk so far found in India have come from Nevasa and Chandoli.

Megaliths

Etymologically, the term megalithic means structures made of big stones (megas = big, lithos = stone). However, all structures made of big stones are not called megaliths; neither the pyramids of Egypt nor the Brihadisvara Temple, Thanjavur, and the Taj Mahal of India have ever been included in the category of megaliths. However, by usage the term is now widely applied to all monuments built especially over the graves or in commemoration of someone dead or even for somewhat imperfectly known religious rites.

The earliest megaliths are located in Palestine dating back to 3200-3000 B.C. It is sometimes held that the idea of megaliths has travelled from Palestine to Africa and Europe towards the West and India and South East Asia towards the East.

Megaliths in India are found practically all over the country except for the Indo-Gangetic plains, the Ganga basin, the Rajasthan Desert and parts of Gujarat. All of them belong to the Iron Age going back to about 1000 B.C. Although these were very popular till 100 A.D. in south India, they are found surviving in the tribal belts of the north-eastern hills, Orissa, Madhya Pradesh and Karnataka till today. The tribal megaliths are, however, mostly commemorative and not funerary. The antiquities found from the megaliths located in areas south of the Vindhyas present a somewhat homogeneous group. They include more than fifty types of iron tools, weapons and domestic

items as well as a particular type of Black and Red ware often with graffiti marks. Some of the graves have yielded bronze objects as well as objects made of shell and burnt clay.

No one knows for certain the immediate source of the Indian megaliths since the West Asian megaliths generally belong to the Bronze Age. However, according to Dr. S.P. Gupta, the people responsible for introducing the megalithic architecture in India are likely to have come from the areas around the Gulf of Oman along the Western coast of India. But the work done so far on the skeletal remains connects them with the present-day Dravidian-speaking population of south India and Ceylon.

The megaliths are collective burials entombing the bones of several persons put together although in a few examples, individual graves have also been found. It may be noted that by and large the bodies were first exposed to birds and animals and only the fragmentary bones of a post-exposure nature were buried; the custom of cremation was only rarely adopted.

An important change from burial among the settlements to burial in separate graveyards has been associated with the first appearance of iron and megaliths in the South. During the subsequent centuries, there was an enormous proliferation of varied practices of disposing off the dead; a corresponding variety is still in vogue in south India and it is inferred therefrom that the burial complex has continued as a part of south Indian culture for a very long period.

In the Introduction to *A Bibliography on Indian Megaliths* by K.S. Ramachandran, in which have been listed 369 published books and articles on the subject, B.K. Thapar rightly observes that the Indian megalithic tombs and related monuments 'show denser distribution in the Deccan and South India. Outside the peninsula, these have been reported from: Baluchistan and Persian and Baluch Makran; Waghodur and Murad Memon within a radius of thirty-two km. of Karachi (Pakistan); Leh Valley of Ladakh; Burzahom in the vicinity of Srinagar; Asota, twenty-seven km. east north-east of Mardan in the former North-West Frontier Province (now in Pakistan); Dausa, fifty-two km. east of Jaipur in Rajasthan; Khera within thirty-two km. of Fatehpur Sikri; Deodhoora, twenty-nine km. south-east of Almora; Badaunkalan, Kotia and Mando in District Allahabad; Arunapur-Lauria, Barkachcha, Benji, Chittampur, Deopur, Jorha and Lalpurawa in District Mirzapur; Bhadahwan Pahar and Kakoria in District Varanasi, all in Uttar Pradesh; and in Seraikela, District Singhbhum in Bihar. To this formidable list may be added the "megaliths" of North-East India, extending from Assam to Bastar and belonging perhaps to South-East Asia, being introduced into North-East India by Austroasiatic immigrants. Three regional complexes may at the present moment be recognized: (i) Peninsular, (ii) extra-peninsular, comprising essentially Northern and North-West India and (iii) North-East India. Besides, on the north-western borders of the subcontinent, especially in Baluchistan and Baluch and Persian Makran cairn-burials with their characteristic ware, sometimes painted with a band of volutes or spirals and showing the use of iron and domestication of horse, form yet another group. An interrelationship between the megalithic customs of these areas has not been worked out and though still speculative, is becoming a subject matter of increasing investigation. Whereas the megaliths of North-East India have been extensively studied and are found to be more or less a living tradition of the aborigines, very little systematic work has been done on those of the other extra-peninsular complex. Recent excavations of some of the megalithic

tombs in District Allahabad have also established the presence of the iron appendage in the graves. In the same region (Districts Mirzapur and Varanasi), iron was not recorded in the excavated megalithic tombs which, nevertheless, show family likeness to those of District Allahabad and of the peninsula.

'Typologically, the megaliths exhibit a wide range: peninsular region — Cairn-circles in the vicinity of Nagpur, cairn-circles, cist circles, menhirs and alignments in northern Karnataka and southern Deccan, dolmenoid cists, cairn-circles, urn-burials and barrows in District Chingleput, cairn-circles and cists including the transcepted variety in the Pudukkottai region, dolmenoid-cists, urn-burials, hood stones (kudai-kallus), multiple hood-stones, umbrella stones (topi-kallus), rock-cut underground caves with single or multiple chambers in Kerala, cists with passage in Districts of Belgaum and Bijapur, and urn-burials in Tirunelveli District at the tip of the Peninsula; extrapeninsular region cists and cist-circles around Karachi, cists in the Leh Valley, menhirs in the neighbourhood of Srinagar, stone-circles around Mardan, stone-circles and cairns(?) nearabouts Jaipur, dolmens in the region of Almora, cairn, cairn-circles and cists enclosed by cairns in the Allahabad, Mirzapur and Varanasi Districts, North-East India menhirs and their alignments, dolmens, stone-circles, cairns and stone-seats in Assam, Chhota Nagpur, Bastar, etc. This seemingly differential distribution is largely conditioned by the available rock-material in the particular region.

'Although there is wide diversity of burial customs, as stated at the outset, other factors give this whole series a general uniformity. In all the graves, pottery and particularly the Black-and-Red Ware, is found, often in quantity. In almost every excavated grave, some objects of iron, of surprisingly uniform types, occur. Another equally characteristic ware, showing white or creamy-white curvilinear paintings under a russet coat, is also associated with some of the megaliths. The use of bronze and gold for ornaments is also attested.

'The megalithic Black-and-Red Ware has been obtained from thousands of megalithic graves and urn-fields in South India during the last two hundred years. It is made generally on a wheel and is typically the product of "inverted firing". The surface is slipped and polished and occasionally decorated with white painted designs. The main types include bowls and dishes, globular vessels, jars, tall lids and concave-sided pot-stands. The paintings comprise simple linear patterns, vertical and oblique strokes, wavy lines, diamonds, loops and lattices. Post-firing scratching known as "graffiti" is a common feature in this ware.

'The chronological range of the peninsular megalithic culture was fixed at Brahmagiri between *circa* 200 B.C. and the middle of the first century A.D. Whereas the *terminus ante quem* is almost securely fixed, the earlier time-bracket has in the light of current research proved to be largely schematic. Two C-14 determinations from Hallur, District Dharwar in Mysore, have indicated 955±100 and 1105±100 B.C. for the overlapped deposits of the neolithic and megalithic cultures. This incidentally would provide an approximate date for the beginning of the Megalithic Culture in the Peninsula. The other C-14 dates for the Megalithic Culture of this region fall within the above time-bracket. Outside the Peninsula, only one C-14 date is of relevance, viz., from Kotia in District Allahabad, at 250±105. B.C. But decidedly more objective dates are needed.'

Dr. H. Sarkar has examined some aspects of megalithic culture of India in his paper on the subject published in *Puratattva*, No. 11, 1979-80, and he writes as under about the modes of disposal of the dead and study of human remains:

'Generally the post-excarnation burial, either in graves, urns or cists was the dominant mode of disposal of the dead; burial furniture included pottery, iron objects, ornaments and so on. Elaborate rites, including interment of animals, before the burial of the human remains were followed. This type of exposure burial appears to be an intrusive element as in the earlier neolithic or chalcolithic cultures, the primary mode of disposal was the extended inhumation burial. Occasionally extended inhumation burial is noticed in the pit-circles of Nagarjunakonda (Subrahmanyam *et al.* 1975), Maski (Thapar, 1957), while burnt bones are reported from the urn-burials at Raigir, Dornakal, etc. Yet, admittedly, cremation and true burial were rather exotic elements in the megalithic culture.

'The anthropometric studies revealed that the megalith-builders were a hybrid population and many sections amongst them believed in the establishment of family ossuary. Yet a distinctive racial strain could be noticed in the skeleton remains found in the oblong cists at Brahmagiri (Sarkar, 1972: 124-63 c) and Yelleswaram (Sarkar, 1972: 20-40). Designated as the Scytho-Iranian they were medium-statured, flat-nosed, brachy-mesocephalic people of robust constitution. The same type of people seem to have been present at Piklihal (Allchin, 1960) and Maski in Karnataka. This cranial index people (77-79 cephalic index) appear to be present at Period III of Tepe Hissar. According to some authorities, the great migration of these Scytho-Iranians took place between 1000 and 2000 B.C. from the region of Ukraine (Sarkar, 1972: 162). Brahmagiri in Karnataka has also revealed brachycephaly having its affinity with that of Period VI of Sialk (*circa* 1000-800). Some of the skulls from Nagarjunakonda (Gupta, Basu and Dutta 1970: 1-17), and Yelleswaram are brachycranial. On the other hand, cists at Raigir, in Andhra Pradesh, brought to light the remains of a dolicho-mesocephalic people. Furthermore, the autochthonous Australoid element was also present at several sites like Raigir and Yelleswaram.

'In a recent study of head-forms from different types of megaliths, it has been shown that the jar-burial people like the one at Adittanular, in the extreme south, appear to possess smaller head-forms, the cranial index being 71.30. It thus falls within the dolichocranial range though verging towards the hyperdolichocephaly. In this study (Sarkar, 1972: 202) a comparison is made between the different cranial types occurring in the earth burial, jar burial and cist burial and the result is quite interesting.

	Earth burial	Jar burial	Cist burial
Hyperdolichocranial	33.33%	46.67%	12.50%
Dolichocranial	33.33%	40.00%	20.00%
Mesocranial	14.29%	13.33%	30.00%
Brachycranial	14.29%	—	27.50%
Hyperbrachycranial	4.76%	—	10.00%

Thus the head-form occurs in the highest frequency (46.67%) amongst the people practising jar-burial and it may constitute the earliest stratum; significantly, there are no brachycranial people amongst them. On the contrary, mesocranial and brachycranial people are common in the cist burial — and these cists are mostly slab-cists. In the circumstances, it may well be concluded that real megalithic monuments in the form of dolmenoid cists or slab cists are perhaps connected with a mesobrachycranial people who might have migrated to India from Asia by about 1000 B.C. There must have occurred intermixing and hybridization amongst different groups with the

fusion of cultural traits and elements. The conclusion based on anthropometric analysis is no doubt on small samples and might not provide a comprehensive picture. Yet it does furnish certain indications which with the comparison of data from other countries are bound to shed light on many a darker aspect of megalithic culture in general and dolmen culture in particular.'

Conservation

B.K. Thapar, writing about the conservation of architectural heritage, says:

'*Conservation* is the action taken to prevent decay and, as such, embraces all acts that prolong the life of cultural property. The ethics of conservation should allow the maximum amount of existing material to be retained. Any intervention, therefore, has to be harmonious in colour, tone, texture, form and scale. At the same time, it should be identifiable from the original so that it does not falsify archaeological or historical evidence. Conservation involves the following stages: (i) prevention of deterioration; (ii) preservation of the structural fabric; (iii) consolidation of the structural fabric; (iv) restoration; and (v) rehabilitation.

'The first three stages are self-explanatory. Nevertheless, the *prevention of deterioration* would involve investigation of the causes of decay and deterioration, not only to a particular building but to the environment and the neighbourhood as a whole. Its extent and scope may also include certain effective and preventive legislation to be enacted. The term *preservation* on the other hand deals directly with cultural property. Its objective is to maintain the building proper in a permanent state of preservation. The terms *restoration* and *rehabilitation*, however, need some elaboration.

'The object of *restoration* is to revive the original character and, as such, should be based on respect for original material, original design and authentic documented evidence. Restoration must be governed directly by respect for the aesthetic, historical and physical integrity of the building. It is warranted essentially by (a) the need for affording stability to the fabric of the building, and (b) the need, perhaps more importantly, to retain, for the next generation, the essential architectural features. Mechanical repetition with mathematical precision of any item, particularly the decorative features, is to be discouraged. When carried too far, restoration can devalue the message which a historical environment seeks to convey.

'*Rehabilitation and reuse* is a process of returning a historic building or a historic quarter to a state of utility; in other words, putting the buildings concerned to use. It may not, however, be feasible in all cases, especially in respect of religious buildings where religious practices have been discontinued for long due to historical and even political reasons, and where their resumption may pose complex social problems. The next preference is for a sympathetic or compatible use, in consonance with the original function as also the dignity of the building, with or without adaptive alterations through which historic and aesthetic values can be saved and brought up to contemporary standards.

'Conservation, however, does not imply conversion of the 'living' character of the heritage to 'non-living' and eviction of the present occupants and discontinuance of the customary usage or practices of the buildings concerned. It must be ensured that any adaptive use of the buildings is in consonance with their original functions, as well as their dignity.'

Dr. B.B. Lal in his paper on preservation of mural paintings (*Ancient India*, No. 22, 1966, pages 83-84) writes:

'A large number of ancient and historical monuments are embellished with mural paintings and their preservation presents extremely difficult problems. Consequently, not only is it necessary to maintain a constant vigil on these works of art, but the problems of their preservation have also to be carefully studied for evolving suitable methods for their conservation. The most favourable environmental conditions for proper preservation of paintings are an average temperature of 20°C with only minor fluctuations, a relative humidity of 60%, effective ventilation for preventing stagnation of moist air and freedom of air from dust and other impurities.

'The preservation of paintings presupposes not only a clear understanding of the artists' methods and materials, but also the behaviour of these materials under varying conditions of humidity and temperature. The first step in the chemical conservation of paintings is, therefore, the study of the methods and materials employed in their execution.

'The main constituents which comprise a painting are the 'carrier', the 'ground', the pigment and the binding medium. In order to assess the deleterious effects of marked changes in temperature and relative humidity on paintings, be they on wall, canvas, paper or other support, each of these factors has to be studied in detail and its behaviour-pattern determined by careful examination and chemical analysis. Mural paintings are particularly susceptible to the deleterious effects of excessive heat and moisture on account of their location; consequently, their preservation is a complicated matter. The preservation of oil paintings and miniatures is equally complicated, but, being portable, they can be kept in museums under controlled conditions of humidity and temperature. It is, therefore, necessary to bear in mind the fundamental difference between preservation of paintings in museums, where relative humidity and temperature can be carefully controlled, and the preservation of paintings in monuments, where no such control is practicable.

'A systematic scientific study has been conducted with a view to determining the nature of materials used in the execution of mural paintings. The pigments have been analysed, the composition of plaster has been determined and the nature of binding media ascertained by chemical analysis. For the study of binding media, the technique of chromatography has been found to be very useful. This technique helps in the identification of egg, glue and oil media in old paintings.'

The central organization for preservation of monuments ceased in 1885. The listing of the monuments, which had started in 1883, continued, however, under the local administrations.

The Golden Age for ancient monuments and their preservation was ushered in by Lord Curzon, who appointed Sir John Marshall as the Director General of Archaeology in 1902 and passed the Ancient Monuments Preservation Act in 1904. This Act was passed to provide for the preservation of the ancient monuments and for the protection and acquisition in certain cases of ancient monuments and objects of archaeological, historical or artistic interest. Large scale repairs were forthwith undertaken.

These monuments form part of our history and tradition. They are invaluable links between the past and the present and, therefore, must he looked after with the utmost care, devotion and affection.

Though preservation, not restoration, has been the rule, deviations from this rule were sometimes necessary, particularly at the initial stages. Some broad principles of conservation were embodied in a Conservation Manual

issued first in 1907 and again in 1924 by Sir John Marshall and by periodical staff memoranda of the Director General, Archaeological Survey of India.

T.N. Ramachandran writes: 'The treatment of a monument aims at (1) its preservation without disfigurement or alteration of its character; (2) its maintenance in a proper and attractive condition; (3) the complete examination of its remains and documentary evidence concerning it; and (4) the preparation of monographs, guidebooks and reports, so that its historical and artistic interest may be brought home to the scholar and the visitor and may rouse general interest in the past relics of the country.

'Much ingenuity, care and patience are needed for the successful preservation of monuments. This will be readily admitted if one goes round India and looks at the variety of the monuments ranging from the prehistoric burials, early *stupas* and temples down to mosques, forts and *mahals* of the eighteenth century.

'While the factors responsible for the dilapidation of the monuments may be various, e.g., the action of wind and weather, the failure of parts of the building through faulty construction or wilful damage, disintegration of mortar or displacement of masonry by vegetable growth and tree-roots and subsidence of foundation, each malady has its own remedy, the one different from the other. The visitor to a conserved monument can have little idea of the amount of work which might have been necessary to preserve it, for unlike other architectural works or modern buildings, the success of conservation depends upon the measure of its restraint and invisibility. Restraint is indicated by the control of repair material foreign to the monument; by invisibility is meant that this foreign material is hidden from the view of the spectator.'

Large-scale chemical preservation of monuments was begun in 1937, when the decaying sculptures of the famous caves at Elephanta were chemically treated with very spectacular results. This type of preservation work has since been extended to a large number of monuments.

According to M.N. Deshpande: '... for the proper preservation of a monument, the foremost prerequisite is the thorough understanding of the monument in all its aspects—its history, architecture, structural weaknesses, the strength of the building material and above all, its environment. In fact, I would go a step further to state that the solution of a problem is inherent in understanding the problem.

'The next important aspect is the building up of technical expertise in the matter of structural conservation. This is a very specialized job and should continue to be the responsibility of engineers specially trained for the purpose and directed by the archaeologists.'

It was in 1944 that for the first time the conservation of ancient monuments was taken over by the Archaeological Survey of India with its own engineering staff specially trained for the purpose. This experiment has proved a great success, for the problems of ancient monuments can best be understood by the conservator who by training is also an archaeologist.

R. Sengupta, making a plea for better conservation management, writes: 'In Wheeler's own country in the U.K. as anywhere else, architects are employed as conservators of ancient monuments. Wheeler should have reorganized the Survey's Engineering Branch when the system of execution was changed, by employing architects instead of taking over the P.W.D. engineering staff who were unimaginative and devoid of sensitivity. Employment of subordinate engineering staff of the P.W.D. as conservators was a mistake....'

For a country of the size and cultural wealth of India, many conservation centres with specialisation in various areas are needed. Conservation of cultural property falls into two basic fields, viz., structural and chemical. In respect of the latter, at present we have only one National Research Laboratory for Conservation, located at Lucknow, which has recently set up a branch at Mysore. Besides, the Survey and the other major museums have their own Conservation/Science Laboratories. The latter largely look after the work of their own institutions and that too not completely, with the result that most of the collections in the smaller museums as also in private hands remain uncared for.

Conservation, both structural and chemical, admittedly is a professional discipline. For structural conservation, there are no institutions for imparting such training. The Survey provides only in-service training to its employees. Concerted efforts have, therefore, to be made to train people in the field of conservation and to extend and enlarge the existing facilities in the country, particularly in institutions which have some infrastructure for providing training.

The Indian National Trust for Art and Cultural Heritage has undertaken steps to provide training to Indian nationals in U.K. under the Charles Wallace (India) Trust both in architectural and chemical conservation and has also instituted scholarships at the School of Planning and Architecture, Delhi, where courses on urban conservation have been started for Master of Art Degree. INTACH within its meagre resources has also set up its own Conservation Laboratory largely as a servicing agency for the preservation of textiles, paintings, manuscripts, etc. But this is not enough. More needs to be done in this direction because the material to be conserved is out of all proportions to the existing facilities. Sponsoring of more scholarships from the Government in these areas and starting of more centres of urban conservation at other Schools of Planning and Architecture are needed to meet this requirement.

The newly set up Institute of Archaeology should also expand its activities in conservation, training and organizing crash courses for practising architects. Such crash courses would change attitudes in favour of conservation.

Even after forty-four years of independence, the conservation facilities in the country in terms of men and money remain disproportionate to the quantity and quality of the heritage. Budget for conservation is only a fringe of the total budget of an institution and the treatment the conservation profession meets at the hands of those in power is not at all encouraging. Those who exercise authority should not forget that it is the conservation of the holdings of an institution that keeps such institutions alive.

During the past three to four decades, many conservation laboratories have been set up but they still remain under the minimum need level. In many of them, only a few hands are available with inadequate facilities at their disposal.

The Chemistry Branch of the Survey, with its headquarters at Dehra Dun, the regional laboratories at Hyderabad and Bhubaneswar, and zonal laboratories at Delhi, Chandigarh, Vadodara, Agra, Aurangabad, Ajanta, Indore, Mysore, Madras and Patna, continues to look after the monumental task of preserving the monuments of national importance.

The National Research Laboratory at Lucknow which has a beautiful building of its own now is well-equipped in men and equipment to do useful research work which also helps other institutions in the country. It has recently opened a regional laboratory at Mysore to cater to the needs of the southern

part of the country. However, facilities for actual conservation need to be augmented manifold even in this laboratory.

The Conservation Laboratory of the National Museum continues to contribute its share in conservation of antiquities and helps to build the conservation infrastructure needed by the country. Its latest achievement is the introduction of a two-year Diploma Course in Art Conservation which it offers to freshers and a three-month training course for in-service conservation personnel of the country. It also helps similar institutions of neighbouring countries.

There are other laboratories also which contribute in meeting the challenge of conservation, namely, the laboratories of the Indian Museum, Calcutta, the Salarjang Museum, Hyderabad, the Government Museum, Madras, the Baroda Museum and Picture Gallery, Vadodara, the Directorate of Archaeology and Museums, Rajasthan, Jaipur, the Regional Conservation Laboratory of Archaeology, Trivandrum, the Department of Archaeology and Museums, Patiala, the Victoria Memorial Hall, Calcutta, etc. Other laboratories have single man outfit. Such laboratories are not many and they continue to work in isolation.

Studies in Archaeological Chemistry made by Prof. K.T.M. Hegde of M.S. University of Baroda, and Dr. H.C. Bhardwaj of Banaras Hindu University, Varanasi, need a special mention. Both of them have done commendable work in their respective fields.

Darryl D'Monte writes: 'In many ways, the international workshop on architectural conservation held at the medieval dead town of Champaner was unique. It was the first time that the Survey lent its full-fledged support to a voluntary organisation, the Vadodara based Heritage Trust. The third organiser was the Indian National Trust for Art and Cultural Heritage, New Delhi.

'What is more, this is probably the first time that a non-governmental group has drawn up a comprehensive plan for an ancient site which tries not only to seek ways and means of preserving the ruins — many of which are still buried under the ground but also to meet the needs of the local people living in the vicinity. In a word, development, too. Finally, the Heritage Trust recognised that unless steps were taken to promote the awareness among the public of the glory that is a site like Champaner, it is destined to perish.'

Important Excavated Sites

An archaeological excavation is a fascinating operation. To the layman, the archaeologist is a romantic figure who digs for discovering hidden treasures, royal tombs and cities. But, in fact, the archaeologist spends most of his time after digging a site in research work, such as classification and interpretation of unspectacular and repetitious objects usually of no monetary value. Passion, enthusiasm and vitality are the basic qualities which the discipline of archaeology exacts from him. Sir Mortimer Wheeler observes:

'I do not even know whether Archaeology is to be described as an art or as a science...But it is at least abundantly clear that Archaeology is increasingly dependent on a multitude of sciences and is itself increasingly adopting the methodology of a natural science. It draws today upon physics, chemistry, geology, biology, economics, political science, sociology, climatology, botany, and I know not what else. As a science, it is pre-eminently a synthetic process; and if we prefer to regard it as an art, or even as a philosophy, we must still affirm that it is an integration of scientifically observed and dissected phenomena relating to man; it is still a synthesis. These are not definitions, they are merely descriptions, and incomplete at that. It will not help us forward to our main objective, the study of human cultures, to spend time and ingenuity upon the academic niceties of definition.

'But there is one guiding condition of our work which I would emphasize at the outset. We belong, some of us, to a generation which has been involved actively in two wars. Military similes are therefore not entirely alien to us. And I would accordingly urge that in one vital respect at least there is an analogy between archaeological and military field-work that is recurrent and illuminating. The analogy rests, strangely enough as between the dead and the deadly, in the underlying *humanity* of both disciplines. The soldier, for his part, is fighting against a fellow-being, with different but discoverable idiosyncrasies

which must be understood and allowed for in every action and manoeuvre. Equally the archaeological excavator is not digging up *things*, he is digging up *people*; however much he may analyse and tabulate and desiccate his discoveries in the laboratory, the ultimate appeal across the ages, whether the time-interval be 500 or 500,000 years, is from mind to intelligent mind, from man to sentient man. Our graphs and schedules mean nothing if they do not ultimately mean that. Of our scraps and pieces we may say, with Mark Antony in the market-place, "You are not wood, you are not stones, but men." It is a truism of which I constantly find it necessary to remind the student and indeed myself that the life of the past and the life of the present are diverse but indivisible; that Archaeology, in so far as it is a science, is a science which must be extended into the living and must indeed itself be lived if it is to partake of a proper vitality."

Kathleen M. Kenyon writes: 'To begin with, archaeology is not an end in itself, not just an abstract study. It is the method of finding out about the past of the human race in its material aspects, and the study of the products of this past. These aspects may be the way people lived, the way they worshipped, the way they built, their art, their trade, their travels. All these aspects are of course studied by historians. But historians are concerned primarily with written records, and the earliest systems of writing were only invented some five thousand years ago, whereas man was evolved from his ape-like ancestors about half-a-million years ago. In the study of man during this immensely long period, archaeology is necessary, for archaeology deals with all the material remains of man, the objects he used and made, his dwelling places and defensive structures, his tools and weapons, the remains of his food, his own bones and burial places, and, from these, deduces how he lived. Thus archaeology provides the information for the prehistory of man, his history before the beginning of written records.' But the use of archaeology does not stop even when written records begin.

Prehistory is a hundred times as long as history; our knowledge of man's achievement thus depends to a disproportionate extent upon the unwritten records of stone, metal, clay, and other materials which time has buried. The modern archaeologist recovers these buried records by certain methods of archaeological excavation and at the same time emphasizes their human content.

The curious among those who come to see an archaeological excavation often ask the question as to how the archaeologists select the sites for undertaking excavations. The answer is that every archaeologist goes to a site with a problem in his mind. He seeks to find solutions by digging up sites for those problems. Before going to the site, he is expected exhaustively to consult all the relevant published material by way of references in literature, foreign notices, itineraries, diaries, etc. After getting this picture, he goes to the locality and makes a surface exploration to find out if any of the buried antiquities are exposed in the rain-gulleys or pits made for road-making or for agricultural purposes. Thus he observes and collects materials like pottery that may be jetting out in the rain-cuttings. They incidentally give him an approximate picture of the cultural sequence. He also gets into touch with the elders in the locality and obtains from them any relevant data about the antiquity of the village, the antiquarian remains, the inscriptions and the architectural monuments that may still be standing. These data are helpful in arriving at an equation whether the site is of any antiquity or not. Another method that is generally adopted by archaeologists is to make a probe at the site. These trial-digs at mounds or prominences give us some idea about the cultural sequence.

The search for archaeological remains has now been made simpler by geophysical methods, derived from techniques for prospecting of soil and minerals. The new methods enable information to be gathered about what lies buried in the ground much more quickly than older methods which can require years of work, says a UNESCO publication. Using electric resistivity, electro-magnetism and gravimetry, the lay-out of buildings and archaeological complexes, invisible from the surface, can be determined, without extensive digging.

Important excavated sites in India, Pakistan, and Bangladesh which together constituted pre-Partition India have been described in this chapter. Although the vestiges left by prehistoric man go to the Early Stone Age in India, the beginning of regular settled life does not seem to have started prior to neolithic/chalcolithic times. In the following pages, therefore, the cultures of Stone Age or pre-neolithic man have not been included.

Neolithic Cultures

Burzahom

Burzahom, which is situated about 24 km. north-east of Srinagar in Kashmir near the foothills of Mount Mahadeva and about 5 km. north-west of the famous Shalimar Gardens, commands a panoramic view of the glistening Pir Panjal ranges, the lush green valley and the shimmering waters of the Dal Lake. The excavation at Burzahom during 1960-69 conducted by T.N.Khazanchi, assisted by Sardari Lal, R.K. Pant and B.M. Pande of the Archaeological Survey of India, has opened up a new chapter in the history of Kashmir.

Kashmir was once a huge lake. This is enshrined in the local tradition and was also substantiated by lacustrine deposits on some of the Karewas, which are the lake deposits. The story of the excavated site of Burzahom is the story of the earliest settlers in Kashmir after the lakes had dried up, the land formations had been formed, and the valley, though mostly swampy, was fit for habitation.

The Yale-Cambridge Expedition led by de Terra and Paterson had noticed menhirs at Burzahom in the early thirties of the present century. A limited excavation was conducted by them and on the basis of the potsherds and designs thereon, the chronological horizon of the site was determined by them to be between 3000 and 1800 B.C. The archaeological remains were taken to be belonging to 'either a late or an early phase of the Indus Culture'.

The archaeological excavations carried out in the sixties brought to light a culture sequence radically different from that proposed earlier by de Terra and Paterson. The chronological horizon too has now been determined between the middle of the third millennium B.C. and the early centuries of the Christian era.

On the basis of the recent excavations, the cultural remains at Burzahom have been divided into four phases, the first two being neolithic, while the third phase, associated with the menhirs, has been designated as the megalithic. The fourth and last phase is of early historical times datable to the early centuries of the Christian era.

The main feature of the first phase was the circular dwelling pit-chambers and subterranean rectangular chambers dug into the loess, the natural soil at Burzahom. It is because of these typical dwellings that the earliest inhabitants of Burzahom have been christened the 'pit-dwellers'.

The presence of post-holes on the periphery of the pits clearly indicates some kind of roofed superstructure for covering these pits. Similarly, burnt birch, hay, etc., inside some of the pits, show that the roof, which was supported by wooden posts, was thatched with birch. It may be mentioned here that until recently, birch was the normal roofing material in the region.

In the first phase, the inhabitants used to live in pit-dwellings and used mostly hand-made pottery, bone implements, including harpoons, points and scrapers, and ground stone tools like chisels, axes, etc. In the second phase, towards the end of which metal was also introduced, the inhabitants started living in structures built overground and began using wheel-made pottery. The use of bone and ground stone tools, however, continued.

According to B.M. Pande "One particularly important discovery from Burzahom is a stoneslab with a hunting-scene engraved on it. This slab, as also another smaller one containing a 'tectiform' engraved on it, is the first ever find of prehistoric art from a regular, stratified dig, and both belong to Neolithic Phase II of Burzahom."

The third phase represented by the menhirs is in continuation of the earlier two phases, without any stratigraphical gap. The objects belonging to this phase are similar to those of the earlier two phases. The only marked difference is the use of wheel-made pottery and metal. Beside the menhirs, structural activity was noticeable in a rubble wall which was perhaps a part of a large structure. The presence of menhirs at Burzahom is significant for, until recently, the megalithic remains had been reported only from south India, central India and partly from Uttar Pradesh. The remains of the fourth and last phase belong to the early historical period and may be dated somewhat earlier than the Buddhist site of Harwan ascribable to the third-fourth centuries. The deposits belonging to this phase were found to be only skin-deep. The pottery was predominantly red ware and metal was in regular use.

The mound was thereafter deserted and its north-west part is used by the people of the present-day village as a graveyard.

Gufkral

Gufkral, near the Tehsil town of Tral, District Pulwama, Jammu and Kashmir State, is situated 41 km. to the south-east of Srinagar. The site, which was explored in 1962-63, was excavated under the direction of A.K. Sharma of the Prehistory Branch of the Survey in 1981. One season's limited dig filled some of the gaps in the cultural sequence of Kashmir and definitely pushed back the antiquity of the Neolithic Culture in the Valley. As the earliest C-14 date for Period IB is 3980 ± 120 B.P., the Aceramic Neolithic Period is likely to go back by 400 to 500 years earlier.

At the top, the mound measures 400 m. north-south and 75 m. east-west. Maximum height of the mound from the road level on the western side is 35 m. The excavation was restricted almost to the centre of the mound where 3.10 m. of habitational deposit was encountered over the natural soil. Some scrapings which revealed oval and rectangular pits were also made in the rain-gulleys. Three main cultural periods of occupation were brought to light as under:

Period I A — Aceramic Neolithic
Period I B — Early Neolithic
Period I C — Late Neolithic
Period II — Megalithic
Period III — Historical

Each period was clearly sealed by a floor of the subsequent period. According to the excavator (*Puratattva*, No. 11, 1979-80), the most significant finds of this excavation were: (a) presence of a well-defined Aceramic Neolithic level, (b) identification of cereal grains and (c) faunal assemblage. The details of the culture sequence as summarised by the excavator himself are given below in his own words.

The Aceramic Neolithic Period having a deposit of 35 cm. to 1.10 m. was sealed by a continuous floor of yellow compact clay mixed with 'Chunam' running in all the trenches. The period is divided into two phases of occupation, marked by the presence of two floor levels, one on the top of the natural soil and the other after a deposit of nearly 30-35 cm.

Settlement consisted of large and small dwelling-pits cut into the loessic deposits, being circular or oval on plan with narrow mouths and wide bottoms. They varied in diameter from 3.80 m. to 1.50 m. at the top. Large dwelling-pits generally belonged to phase 1 and were only 20 to 30 cm. deep. A number of post-holes, to support structure of grass and reed were noticed around the pits and the hearths. The recovered mud chunks with reed impressions indicate that most probably the lower portions of the superstructures were plastered with mud to give strength and prevent entry of water and snow from sides. In phase 1, the floors of the dwelling-pits and storage pits, all cut into the loessic deposit (top of natural soil) and their working levels in a wide area, were plastered with red-ochre paste. No such treatment was available in the floors belonging to phase 2. Some dwelling-pits cut in phase I were subsequently enlarged and used in phase 2 also as indicated by the successive deposits inside these pits. In phase 2, two chambered dwelling-pits were also available and were deeper than their counterparts in phase 1. In phase 1 the hearths were rectangular in shape whereas in phase 2 both circular and rectangular hearths made of burnt clay were available. One of the circular hearths had its floor and sides plastered with mud. This circular hearth was 93 cm. in diameter (outer) and 30 cm. deep. It had post-holes on its outer periphery, the presence of these post-holes and large quantity of ash from inside the hearth along with pebbles, indicates that the hunted animals were suspended from these poles and over the fire in the hearths.

The maintenance of floors, covering a wide area around pits, shows that people used to live outdoors during warm season and occupy dwelling-pits in winter, but roasting of food (both flesh and grains) was done probably outside, for no hearth or fire-place has been found inside the dwelling-pits so far.

Among the artefacts used by the settlers are polished stone celts, both finished and unfinished stone points, with one or both the ends sharp, made out of Himalayan Trap, broken unfinished ring stone, pounders and querns. A large quern with a depression on the working surface and showing red ochre paste adhered to it was recovered from the red ochre treated floor near the dwelling-pit in one of the trenches.

Twenty-seven bone tools, some having the entire body surface polished and others having their working tips alone polished, were recovered. They were shaped out of long bones, splinters and horns. Most of these were points and arrow-heads. Besides, two awls, some piercers and scrapers were also recovered. Of special mention, however, is a polished bone needle with damaged eye. The tips of a large number of tools have been charred to give the required strength to the working ends. Bone tools were mostly made from the green bones of sheep, goat, cervus and ibex being generally preferred. Arrow-heads were tiny in size like microliths with only their tips charred and polished.

Among the ornaments recovered, one cylindrical highly polished spacer bone bead and two steatite beads, one cylindrical and another barrel shaped, deserve special mention.

The animal remains amply demonstrate that in the Aceramic Neolithic Period at Gufkral, people were predominantly dependent on wild game. Domestication of a selected variety was just being introduced. The animals represented were wild sheep (*Ovis Orientalis*), wild goat (*Capra aegagrus*), wild cattle (*Bos namadicus*), Red deer (*Cervus elephus*), wolf (*Canis lupus*), Himalayan Ibex (*Capra Ibex*), Himalayan Tahr (*Capra jamlaica*), serow (*Nemorhaedus bubalinus*) and bear (*Ursus*). Sheep (*Ovis aries*) and goat (*Capra hircus*) were the only animals being domesticated.

With the exception of *Canis lupus*, all the animals hunted were herbivorous. This is possibly due to the fact that these animals were easily available in the surrounding hills and slopes.

Ovis, Capra, Bos and *Cervus* formed the largest percentage of animals hunted, *Ovis* dominating over all.

Evidence of grains obtained by floatation technique indicates that in this Period people had already realized the importance of grains for food and were either collecting and/or had started cultivation in a limited area. The second possibility is remote as, so far, no harvesters and good specimen of ring stones have been recovered from this period. But one thing is certain, that in Kashmir Valley wheat, barley and lentil had much earlier antiquity than rice which is the staple food of Kashmiris in the Valley today and which is grown extensively all over the Valley. It will be interesting to investigate as to why and when the earlier grains almost totally disappeared from the Valley and were replaced by rice. What were the circumstances that led to total change in the food habits of the people of the Valley? Was rice introduced with the arrival of a new wave of people? Evidence in this direction is available from the excavation as rice was recovered from Period II, which is marked with the arrival of Megaliths at the site and could be safely dated to c. 1000 B.C. pending C-14 tests. The following grains were recovered from the Aceramic period: (i) *Hordeum Vulgare Linn*—Six row barley (ii) *Triticum sp.*—Wheat (iii) *Lens esculenta Moonch*—Lentil, Masur, and (iv) *Lithospermum arvense*—a weedy plant.

The Period IB is followed without any break and is represented by deposits of 40 cm. hand-made Neolithic pottery. Overwhelming percentage was of grey ware with a few sherds of coarse dull red ware. The shapes represented were big jars, bowls, basins and one stem piece of dish-on-stand in coarse dull red ware. The decorations included mat-impressed bases, pinched designs on the neck region and reed impression only on exterior and also both on exterior and interior of the pots. Pottery is mostly incompletely oxidised.

Settlement pattern of this period is indicated by the presence of a 5 to 7 cm. thick floor made of yellow compact clay mixed with chunam running throughout in almost all the trenches. At some places, this floor was repaired at least 5 to 6 times. The most important building activity was the construction of mud and rubble walls. A compact mud mixed with chunam wall-like structure running parallel to each other, 70 mm. uniformly wide throughout and having almost same space in between, was also encountered. There is no dwelling-pit in this period. It was characterized by extensive burning activity.

The artefacts included one stone point, one broken ring-stone and nineteen bone tools.

The Period was marked by sudden spurt in domestication of animals like sheep, goat and cattle. Sheep and goat still dominated the scene with the size of

goat getting reduced. Wild sheep, goat and cattle continued to be hunted but in a far lesser percentage. Percentage of dog bones increased with marked reduction in the percentage of bones of wolf. Short horned cattle were present. Presence of bones of red deer, ibex and bear indicates that hunting was still the main source of food. Many of the pieces bore sharp cut marks. In the long bones, holes were carefully drilled out to extract bone marrow. Domestic fowl (*Gallus*) was added to the menu. Apart from all the grains of Period IA continuing, common pea (*Pisum arvense Linn*) was added.

Period IC belonging to the mature phase of Neolithic Period was represented by a 70-80 cm. thick habitational deposit and was sealed by a thick whitish floor throughout. It was characterized by the presence of a large number of refuse-pits and dumps.

Pottery consisted of grey ware, burnished grey ware, rough thick dull red ware along with the introduction of black burnished ware and wheel-turned black burnished ware. A few examples of red gritty ware were also found. All the shapes of Period IB continued and long necked jars were introduced. Dish-on-stand with triangular perforated designs on the stem region on burnished ware was also introduced. Decorations included mat and cord impressed bases, reed impression to create roughened surface of grey and dull red ware, pinched designs on the neck region and incised oblique designs in the neck region in dull red ware, knobbed designs on the neck region of the wheel-made black burnished ware. A sherd with graffitti was also recovered.

Stone objects were scarce. Only one unfinished stone celt was found. Stone points which had almost disappeared in Period IB make their appearance again in good number. Other stone objects included querns, pounders and balls. Double-holed harvesters, one having incised decoration on one side and spindle whorls of both stone and pottery were the important objects which made their appearance in this Period; spindle whorls having large holes indicate the beginning of spinning of thick threads for woollen garments.

One stone engraver used by potters for removing extra clay while finally shaping the pot before drying was also recovered. Other cultural assemblage included terracotta bangles, potsherds with graffitti marks, and terracotta with relief designs. Of special significance is the recovery of a copper hair pin with flattened coiled head from upper levels of this period, similar to one found at Chanhudaro. It may point out to some foreign contacts.

The Period yielded the largest number (forty-one) of bone tools, most of which were well polished points. Tips were generally charred and sharp particularly in case of micro tools like arrow-heads. Few awls, one spatula and a harpoon were other tools represented. A bone object with four incised grooves was also recovered.

By this time, domestication of animals was complete. The entire herd of sheep (*Ovis aries*), goat (*Capra hircus*) and cattle (*Bos indicus*) were domesticated. There was considerable reduction in the size of goat and cattle. Sheep and goat continued to dominate the percentage of animals. Two important new species, namely, pig (*Sus scrofa*) and fish made their appearance. Bones of hare (*Lepus*), hedge-hog rodents and beaver were also recovered.

All the grains found in Period IB were also recovered from this period.

Domestication of animals, and advent of harvesters and spindle whorls indicate that by this time the Neolithic people at Gufkral had adopted a well-settled life wherein practice of agriculture, cattle breeding and herding and weaving of woollen cloth had become a way of life. Hunting was now restricted

to red deer and ibex and that too on a limited scale as the percentage of these animals had considerably reduced in the assemblage. Contacts with the outside world had also started.

Period II which is associated with the arrival of menhirs on the site has been designated as the Megalithic Period. It is represented by nearly 50-60 cm. thick habitational deposit. In one of the quadrants near a fallen menhir, a pit cut in layer 3 containing large quantity of packing material comprising of broken pebbles, was exposed. Since not a single menhir is standing and as a huge quantity of broken pebbles are littered all over the site, mostly concentrated near the menhirs, it appears that the menhirs did not have very deep foundation pits and that arrival of menhirs was a much later affair. But this needs to be further checked by firmer proofs.

The Period was marked by the presence of nearly 10 cm. thick floor, running throughout, with few breaks due to pit activities. The Period also witnessed considerable pit activities. A number of refuse-pits sinking right upto the natural soil were cut. From these pits, large quantity of pottery and animal bones were recovered.

Burnished grey ware, gritty red ware and thick dull red ware continued from the previous period but percentage of thick dull red ware and wheel-made pottery increased. Wheel made dull red ware made its appearance; shapes included jars with shapeless rims, long necked jars, bowls, basins, dish-on-stand and medium sized globular jars. Pinched designs, in neck region, incised designs and combed surface obtained by brushing with straw and reeds were available. Vessels with channelled spout were introduced.

Large ring-stones, both finished and unfinished, were recovered in good number. Stone points had almost disappeared. Other artefacts included a copper pin, a wooden bead, pestles, spindle-whorls with medium sized holes and a miniature pot. The only cowrie found was from this period.

Bone tool industry came to be neglected. Only twenty tools were recovered and these too were not well polished. New innovations were bone handles shaped mostly from tibia of sheep/goat taking advantage of their shape and bone arrow sockets. They were meant to hold smaller tools for easy operation. A fine cobbler's awl was also recovered.

All the grains of earlier periods continued. Rice (*Oryza sativa Linn*) and millet (*Eleusive coracana*) were introduced towards the end of this Period.

Animals represented were cattle, sheep, goat, dog, pig, ibex and fowl. It appears that hunting had almost come to a close, for amongst bones of wild animals only those of ibex were recovered.

Period III represents the historical occupation of the site. A thick compact floor made of whitish clay was running almost throughout sealing the Megalithic Period. The limited excavation has not yielded any structure except floor levels so far but in the exposed areas in other parts of the mound, thick rubble walls could be noticed.

Hand-made pottery continued but was dominated by wheel-made thin bright red ware. Shapes encountered were jars, bowls, miniature pots, lamps, vases, dishes of Harappan shape, knobbed lids, lid-cum-bowls, double rimmed pots and cup-on-stand. Few sherds of black painted red ware with stamped designs were also collected. Stone bowls were also found. The artefacts included crude bone tools mostly points, one fine polished bone handle, ring stones, pounders, a few stone points and a terracotta huge circular disc (appears to be a halo on the back of the head of an image).

Iron was introduced in this Period. All the grains of the previous period

continued with a definite evidence of rice (*Oryza sativa Linn*) from the lower levels of this period.

Animal bones recovered were identified to be those of cattle, sheep, goat, dog, pig, cat (*Felis*), fowl and rodents.

Sarai Nahar Rai

Sarai Nahar Rai is 15 km. south-west of Pratapgarh town in Pratapgarh pargana, Uttar Pradesh, and is within the central Ganga valley. This region is bounded on the south by the Ganga river and on the north by the Sarju river. The site is situated on the shore of an ancient oxbow lake, an isolated meander of the Ganga of terminal Pleistocene times. The river's present course is 55 km. to the south. The lake is now dry, save for a small vestige 4.5 km. to the west at Srinagar village where it is known as Khoalan Jhil. However, when the lake-bed held water for most of the year, its shore provided an open-air camp and burial ground used by nomadic hunter-gatherer bands of Mesolithic people. The total area which retains traces of their occupancy measures 2800 m. and is marked by microliths, hearths, faunal remains and burials which are exposed in the severely eroded eastern part of the site.

The following extracts have been taken from the paper 'Mesolithic Human Remains from the Gangetic Plain, Sarai Nahar Rai', by Kanneth A.R. Kennedy, Christopher B. Burrow, and Nancy C. Lovall (*Puratattva*, No. 15, 1984-85).

'Discovered in 1968, the site of Sarai Nahar Rai in the Gangetic Plain is important to palaeo-anthropologists both for its archaeological record of Mesolithic artefacts and associated faunal remains, and for its mortuary series of fifteen human skeletons. This is one of the largest skeletal series of Mesolithic hominids from India discovered to date, and the condition of preservation of the remains is unusually good. Advanced mineralization of the bones, in undisturbed burial deposits, has allowed for the recovery of a number of relatively complete skulls and post-cranial bones. All of the skeletal specimens are of adults, thus permitting their morphometric analysis and comparison with other prehistoric skeletal series of adult specimens.

'The excavation in 1978-79 of thirty-five well-preserved fossil hominid skeletons from Mahadaha, a Mesolithic site 50 km. from Sarai Nahar Rai, allows an unparalleled opportunity for morphometric and statistical studies of two adjacent, and perhaps contemporary, populations of the Mesolithic period in the valley of the Ganga.

'More than a century has passed since the initial discovery of human skeletal remains from Neolithic cultural contexts in India. However, laboratory examinations and comparative morphometric analysis were never made on the skeletons observed by Carlleyle (1883, 1885, 1880-1881), nor on a skull uncovered a decade later by Foote (1916) at Jalampura, Gujarat, nor on human remains collected by Hunter (1935, 1936) in the 1930s from Pachmarhi, Madhya Pradesh. Serious study of the skeletal biology of Mesolithic peoples in India did not get underway until forty-five years ago with the excavations at Langhnaj, Gujarat, by Sankalia and his associates (Ehrhardt and Kennedy, 1965; Karve-Corvinus and Kennedy, 1964; Sankalia and Karve, 1949).

'Lanka has provided palaeo-anthropoligists with the earliest fossils of Homo sapiens recovered thus far in South Asia, and these have significant implications for the later Mesolithic and skeletal deposits at Sarai Nahar Rai and Mahadaha.

'Pakistan has not provided a human skeletal record of Mesolithic association, nor have human remains of this cultural horizon been recovered from archaeological sites in eastern and peninsular India.

'Sharma (1973) classified the cultural associations of Sarai Nahar Rai as belonging to a geometric microlithic horizon of the early Mesolithic, a tradition characterized in this part of South Asia by small and finely retouched stone tools, such as symmetrical points, lunates, blunted-back blades, scrapers, and triangles. These were fabricated on chalcedony, carnelian, or other fine-grained stones. Large tools are essentially absent. Points and blades predominate over puncturing-boring tools and arrowhead. Nongeometric microliths are present in high frequency. Small clay vessels, made by hand with the coiling technique, were found in most of the graves.

'It is apparent from the great diversity of dates that the evidence for the antiquity of the Indian Mesolithic is presently inconclusive.

'The dental and osteological health status of the Mesolithic population from Sarai Nahar Rai appears to have been unusually good from examination of this limited series, an impression that the authors of the paper mentioned above have formed for the Mahadaha skeletal series as well.

'There are two features of the Sarai Nahar Rai skeletal specimens which are especially pertinent in determining their levels of attainment of full ontogenetic growth potential. One feature is the striking paucity of stress markers on bones and teeth, which are diagnostic of episodes of inhibition of normal skeletal development in many other prehistoric mortuary series, especially those from post-Mesolithic cultural contexts. The economic shift, from the nomadic hunting-gathering lifeway to the subsistence strategies based upon agriculture and herding practices, by Neolithic and more advanced food-producing communities, demanded a biological price which is manifested in reduced skeletal growth and by the high incidence of other markers of growth stress. These latter features include lines of arrested growth in the proximal and distal extremities of long bones (Harris lines), dental enamel hypoplasia, and excessive bowing or curvature of long bones which may be attributed to rickets among other conditions of malnutrition. Dental pathologies such as caries and abscess become more frequent in early and contemporary food-producing populations. However, with the exception of Skeleton 1972-III, the Sarai Nahar Rai series does not exhibit these or other markers of arrested growth or inadequate nutritional resources. It must be emphasized that dental enamel hypoplasia is not always a direct consequence of periodic or chronic nutritional stress. The condition may reflect a wide range of abnormal health conditions suffered by an individual during the earlier period of life when enamel formation is taking place. However, all hazards of health have some bearing upon frequencies and qualities of food intake and upon the metabolic response of the individual to diet.

'The second feature relating to ontogenetic development of Sarai Nahar Rai specimens has to do with their stature. All but one of the specimens described in this series have attained full skeletal maturity.

'Although the sample is small, the Sarai Nahar Rai population appears to be composed of tall individuals, females as well as males, and in this respect they share a physical resemblance to the Upper Palaeolithic peoples of Europe and Western Asia during terminal Pleistocene times. To the same degree they share stature norms with the South Asian Mesolithic population from Mahadaha, but later Mesolithic peoples from Langhnaj, Bhimbetka, Ballanbandi Palassa and other sites in South Asia are characterised by somewhat shorter statures.

'Like their contemporaries in Europe, Africa and in other parts of Asia, the people of Sarai Nahar Rai were anatomically modern hominids, i.e., *Homo sapiens sapiens*.

'With respect to cranial architecture these ancient people of the Ganga valley have large and muscularly robust skulls, which range from low mesocrany to hyperdolichocrany.

'Living stature was tall for both males and females. The major pathological feature relates to osteoarthritic changes, but the overall health status of the population appears to have been good. However, there are no individuals in the series who survived beyond the fourth decade of life.

'These morphometric data concerning the Sarai Nahar Rai series are relevant to two major considerations concerning the course of human biological evolution in South Asia. First, we recognize here an ancient population which was extremely successful in its adaptation to the hunting and gathering way of life carried out in an ecological setting of abundant food resources. Only in this way may we explain the physical responses of this population towards a high realization of their ontogenetic growth potentials and the low incidence of diseases related to nutritional stress.

'The evidence for successful biological adaptation to Mesolithic economic patterns is documented in South Asia by the rich archaeological record. This record attests to the attainment of some fairly sophisticated lifeways and socio-economic strategies, well before the initiation of more advanced food-producing technologies and the shift from a nomadic to a sedentary existence. Surely the exploitation of new ecological settings by Mesolithic peoples, which allowed them to occupy a wide range of natural habitats and to pioneer areas only sparsely settled by their Palaeolithic forebears, is a significant expression of their cultural and social adaptability.

'The second evolutionary consideration is our need to appreciate the nature of the biological affinities of the Sarai Nahar Rai population with other Mesolithic populations in India and beyond. Some effort in this direction has been made by Dutta (1973), who compares the cranium of Skeleton 1970-IV with seven specimens from the Mesolithic site of Langhnaj, a locality in northern Gujarat. Dutta notes that there are similarities between these two populations with respect to cranial length, the form of the forehead, pronounced supraorbital tori, alveolar prognathism, chamaerrhine nasal form, and a few other features, while differences are in cranial and facial sizes and shapes, orbital forms, dental dimensions, and stature estimations.'

Taradih

The Directorate of Archaeology and Museums, Government of Bihar, under Ajit Kumar Prasad, carried out excavations at Taradih, District Gaya, near the world famous Mahabodhi Temple of Bodhgaya, from 1981-82 to 1984-85, under the general guidance of Sita Ram Roy and Naseem Akhtar.

Period I was represented by 60 cm. thick cultural deposit of the Neolithic complex accumulated on the natural soil. The discovery of burnt-clay chunks with reed impression obviously indicated that the people lived in houses of wattle-and-daub.

The pottery was mainly hand-made, although examples produced by turn-table were not altogether unknown. The hand-made pottery was represented by both burnished red and grey wares as well as plain red ware, of which a good number of cord-impressed sherds deserve special mention. Besides, a few examples of slipped red ware were also met with. The red ware had varied colours, such as chocolate, deep red, light red, purple, orange red and so on.

The main pottery types included vase with flared and narrow mouths, *handi* with out-turned rim, ring based bowl, perforated bowl, deep bowl, cups with hollow ring base, cup with solid stand, knobbed lid, storage jar, miniature pot, etc.

A few burnished grey ware pieces bore post-firing ochre paintings on their rim and profile. Some sherds were decorated with linear incision, while larger pots, like storage jars, were decorated with thumbnail, rope and impressed designs. Some of the unburnished sherds bore irregular scratches.

A few ovens of different shapes and dimensions were noticed in the period under review. The larger ovens were probably meant for community kitchen, as numerous charred animal bones with hewn marks were collected from inside the ovens.

The notable lithic antiquities of the period included celt, microlithic blade, core and beads in number, while ball and hammer were represented singly. The important bone objects were arrowhead, point, disc, etc. The terracotta finds included a ball and an archaic animal figurine.

Period II was represented by the cultural remains of the Chalcolithic complex. The pottery of the period, in general, was wheel-made and better fired in comparison to that of the preceding one, but the ceramic specimens of hand-made pottery though in less frequency, still continued. The black-and-red ware made its appearance in the period under review. Not a single cord-impressed potsherd was encountered at this level.

The main pottery types in black-and-red, black, and red wares included vase, dish-on-stand, cup-on-stand, lipped bowl with globular body, outcurved and featureless rim, perforated bowl, ring-based bowl, dish with incurved or straight sided rim, small vase, small to medium sized jar, etc. A few sherds bearing white painting in the form of lines, oblique strokes and dots were also found.

Of the terracotta objects, special mention may be made of beads which outnumber other objects of the same material. The stone beads, microlithic blades and Neolithic celts were also important finds of the period. A few beads of bone were also picked up from this level along with a copper bangle.

Period III was distinguished by the appearance of iron. The quality and fabric of black-and-red, black, and red wares had been improved considerably during this period. These were made of well-levigated clay. The core of these specimens did not show the presence of any paddy-husks or coarser ingredients as was the case with its counterparts in the preceding period. Only sherds of larger pots, such as storage jars, showed the evidence of paddy-husks and coarser ingredients in their cores. The noteworthy ceramic shapes included dish-on-stand, vase, *handi* with or without rim, storage jar, bowl, basin, lid-cum-bowl, etc. A few sherds of black-and-red ware having graffiti marks were also encountered.

The worthwhile associated finds included beads of stone, balls, earlobes and pendants of terracotta, arrowheads, pins, stylus and points of bone, celts of stone, iron objects and a few lumps of iron slag.

Period IV was marked by the advent of the N.B.P. Ware. The black-and-red ware still continued, though in less frequency. The important types included dish with sharp carination at waist, vase of out-turned rim and out-curved beaded rim, bowl with everted rim, bowl with horizontally splayed out rim, basin with beaded rim, lipped basin, lid-cum-bowl, bowl with thickened flat base, etc.

Among the important antiquities of terracotta, mention may be made of

bead, earlobe, pendant, bangle, human and animal figurines, etc. whereas the objects of bone included bangle, points, arrowhead, etc. The noteworthy objects of copper were finger-ring, ball, cast coins, bead, etc. The other objects included finger-ring, nail of iron and celts of stone.

Period V was represented by the red ware of Kushan period such as *surahi*, frying pan with handle, flat-based bowl, etc. Among the noteworthy objects, mention may be made of beads of both terracotta and semi-precious stone.

Period VI was distinguished by the appearance of antiquities of the Gupta and Late Gupta periods. The notable objects were broken votive *stupa* of stone, bead, bangles and gamesmen of terracotta and semi-precious stones, etc. A few terracotta seals and sealings bearing Brahmi script of Late Gupta period were also collected.

Period VII was marked by the burnt-brick wall, drain, rammed and well-plastered floor, probably of a monastic complex belonging to the Pala period. The corresponding stratigraphy of the structural activities of the period showed at least four phases. The important finds of the period were a stone head of a Bodhisattva, panel of a Thousand Buddhas and votive *stupas*, beads of both terracotta and stone. A good number of terracotta seals and sealings of different shapes and sizes were also picked up which showd the legend in Pala-Brahmi characters.

Chirand

The Department of Archaeology and Museums, Government of Bihar, under Dr. B.S. Verma and Lala Aditya Narain, undertook excavation at Chirand on the Ghaghara river, 11 km. east of Chupra town. The excavation revealed three successive periods, of which the upper two were historical.

The excavations at Chirand in Saran District of Bihar have thrown a new light on the Indian neolithic cultures. For the first time, a full-fledged neolithic culture has been discovered in the Gangetic basin. Till about 1968, Chirand was known only for its chalcolithic culture, but in the recent dig, taken up primarily for collecting samples for C-14 dating, a neolithic stratum of 3.5 m. thickness has also been discovered. The culture is known mainly by an impressive collection of bone tools and decorated pots.

A fairly large area (in two different trenches, one measuring 10×10 m. and the other 10×15 m.) of the neolithic phase has been exposed. Among the important antiquities recovered are bone and antler implements. They include different types of celts, scrapers, chisels (from large to small sizes), hammers, needles, points, borers, awls, diggers, a shaft-straightener, pins, stylii, arrow-heads, and many unfinished implements, e.g., the shoulder bone of an ox which seems to have been used as a shovel. 'Such a large variety of bone and antler implements,' observes Dr. B.S. Verma, 'has so far not been reported from any other single site in India, excepting, of course, Burzahom, where the tool-typology is basically different.'

The neolithic people also made bone ornaments such as pendants, ear-rings, bangles, discs and combs. Miniature bone replicas of neolithic stone axes were used as pendants and tortoise bone and ivory were used for preparing bangles. A reel-shaped object having horizontal perforations is also remarkable. The people, therefore, seem to have mastered the technique of making all types of tools and ornaments of bones, even by drilling big hour-glass holes.

Four neolithic celts, besides many other ground implements, such as hammers, have also been discovered. Similarly, a number of other rectangular

tools, pestles, querns, balls, etc., have been found. The rocks used for making these tools were quartzite, basalt and granite.

Dr. Verma writes: 'It is significant to note that the microlithic industry was an integral part of the neolithic culture of Chirand just as they were in south India. The tool types include micro parallel-sided blades, scrapers, arrow-heads, serrated points, notched blades, points, lunates, borers, etc. In addition, a few geometric microliths have also been discovered. The materials used for these tools are chalcedony, chert, agate, jasper, etc. A number of nodules and cores of these minerals were also discovered. It is noteworthy that not a single blade has the crested-ridge. The frequency of cores and nodules indicates that the microliths were locally manufactured. It may be presumed that the nodules were collected from the bed of the river Son, which is not far away from Chirand; just a few kilometres from the site in the south-east direction, there is a place known as Haldi-chapra, where the Ganga meets the Son. Pebbles of different types of stones are found in the sand of the Son and this may be the source of the raw material for the neolithic folk of Chirand.'

A good number of long tubular, long-barrel, short-barrel, cylindrical, triangular, disc-shaped beads of chalcedony, agate, jasper, marble, steatite and faience with an excellent finish were recovered from these excavations. Some of the beads were unfinished which indicated that they were locally manufactured.

Terracottas of humped bulls, bird figurines, *naga* figurines, bangles, beads, punctured decorated objects (one shaped like a miniature *linga*, and another like a barrel) and balls are very common. Two partially broken pieces of rectangular pendants with incised and punctured decorations are very interesting. One of them, with a hole in an applied knob in reverse for pinning, nicely resembles a modern brooch used by ladies. A small perforated stem, probably of a smoking pipe, is another significant object in terracotta. Some terracotta wheels have also been discovered. One wheel-shaped object (without hole) with convex sides and flat edge was discovered from the habitation levels of this phase. A few terracotta discs with central holes, which were probably used as spindle-whorls, have also been discovered.

The pottery of this period is, by and large, hand-made, although a few examples might have been made by using the "turn-table" method also. The bulk of the pottery is in red ware, although grey, black and black-and-red wares were also used. It is important to note that even in the neolithic period, people knew the inverted firing technique to produce the black-and-red ware, but the pottery forms or types are quite different from the chalcolithic black-and-red ware pots and pans. A considerable number of pots had fine lustrous burnishing on the outer surface, the inner surfaces being mostly rough and hard brushed. The people showed excellent advancement in ceramic techniques as the types included vase with broad mouth and narrow neck, spouted vase, bowl, lipped bowl, perforated bowl, footed bowl, oval bowl with broad lip, bowl-with-stand, begging bowl, footed cup, channel spout, miniature pot, spoon or ladle; a knobbed pottery was also made by them. A miniature hand-made dish in red ware, which has double perforations on its four cardinal points, like a toy balance used by children, has also been discovered. The neck portion of the vases was highly burnished, while the bases were rusticated. Applied decoration on the neck portion of the vase was, however, very common. This technique was developed to conceal the butting of the neck with the body of the vases. Post-firing scratch decoration was also done on some of the pots, such as a wheel with hub and sixteen spokes. On one of the

sherds, there is a mat impression which definitely proves that they knitted mat out of some kind of reed.

'One of the interesting characteristic features of the pottery,' writes Dr. Verma, 'was the post-firing paintings in red ochre on grey ware, and rarely on red and black-and-red wares. Only the linear designs were common; crisscross designs in groups of five lines, concentric semi-circles, wavy lines, etc., have been found on the pot-sherds. On one sherd, there is a painting in dots representing a *trisula.* Rim-based painting was equally popular.'

There is some indication that in the early phase people lived on floors made below the ground, although they may have been roofed over. Later, we find them living on ground level floors with reed walls plastered with mud.

Dr. Verma observes: 'It is apparent that rice was known to the people, as paddy-husk impressions have been noticed on some burnt-clay pieces. It has further been confirmed by the discovery of a few examples of charred rice along with other charred cereals like wheat, *moong, masoor*, and barley. However, the people were not pure vegetarians, as is evident from the discovery of a large number of bones of animals, birds and fish, and clusters of fish-scales. The frequency of bone and lithic tools and weapons indirectly suggests that their main occupation was fishing and hunting. River shells and snails were also eaten by them since their remains have been found in great number. Opinion of the experts of the Zoological Survey of India on the remains of bones in the neolithic strata at Chirand has shown that the neolithic people had something to do with the elephant, rhino, buffalo, ox, stag and deer, as the bones of these animals have been repeatedly found in different layers of the neolithic occupation.

'The Chirand neolithic complex, with its developed techniques in fabricating bone artefacts and beads, together with post-firing paintings in elaborate designs on pots, and highly burnished pottery, was certainly an advanced neolithic culture, perhaps without any knowledge and experience of metal working. Chirand is the only site in India which has yielded a neolithic deposit of more than three metres; at Brahmagiri, Tekkalkota, Piklihal and Utnur, the deposits vary between one and two metres only. Although calculating date on the basis of depth alone is hazardous, yet some useful guesses can be made since the deposit consists of repeated sequences of ashy deposits. Available C-14 dates for the neolithic phase range from 1900 B.C. to 1300 B.C. with the possibility of its beginning going back to about 2000 B.C., if not earlier.'

Banahalli

Banahalli, a small village in Malur Taluk, District Kolar, Karnataka, is situated at the foot of a hillock to the south of which is a mound locally known as Sirimannaiadibba. Preliminary surface investigation had yielded Buff Neolithic ware considered to be the earliest of its kind. The excavation carried out by Dr. B. Narasimhaiah and C. Krishnamurti of the Archaeological Survey of India yielded a four-fold cultural sequence:

Period I	— Neolithic (layers 17-23)
Period II	— Neo-Megalithic overlapping (layers 11-16)
Period III	— Megalithic (layers 8-10)
Period IV	— Early Historic (layers 1-7).

Period I, Neolithic, was mainly characterised by the remains of pottery represented by well-burnished buff, red and grey ware, the latter invariably

having a post-firing ochre coloured painting on the rim. Stone implements like celts and rubbers, charred polished bones probably used as stylus, and microlithic cores of quartz comprised the tool kit of this period.

Period II revealed an overlapping of Megalithic and Neolithic cultures. The percentage of Neolithic pottery represented by grey and red wares gradually decreased from the lower levels to the upper levels. The structural remains of this period were again represented by well-prepared floors made of red murram and ashy clay. The lower level however revealed the use of stone chips while preparing such floors instead of potsherds. An outstanding discovery is that of burials inside the habitation. The extended adult burials oriented north-south in oval pits are provided with burial-furniture like spouted vessel, bowls and pots. The pits are invariably sealed with thin cairn packing. It is noteworthy that the burials at Ramapuram, District Kurnool, Andhra Pradesh, have also shown the same features.

Period III, i.e., Megalithic, yielded iron objects along with a few copper objects. The ceramic industry comprised the typical black, red and black-and-red wares of fine fabric. The structural remains encountered were represented by well-prepared floors mostly circular in plan with a number of post-holes.

Period IV, i.e., Early Historic, represented by black and red ware, red ware including the painted variety, which is commonly called Andhra ware or Kaolin painted ware, has yielded beads of terracotta (a terracotta chain), stone, shell, and glass, beautifully moulded terracotta human and animal figurines, etc., and remains of circular house-plans with post-holes having a well-rammed floor. The bottom-most layer, however, yielded the remains of rubble structures and rectangular and circular plans along with a massive retaining wall in the southern periphery running in east-west direction, but with a slight north-west-south-east orientation.

Brahmagiri

Brahmagiri, in Chitaldurg District of Karnataka State, identified with the town of Isila mentioned in Asoka's rock-edict in the adjacent village of Siddapur, was excavated by the Archaeological Survey of India under the direction of Sir Mortimer Wheeler in 1947. The results of the excavations, although vital and for the first time offering a reasonable picture of the early cultures of south India, had perhaps oversimplified the nature of the pre-megalithic cultures in south India.

In all, there was a sequence of three cultures here: Polished Stone Axe culture divided into two phases, Megalithic culture and the so-called Andhra Culture of historical times. Polished stone axes with pointed-butt, crude microliths, scanty copper and a coarse, grey, hand-made pottery formed the main materials of the first culture. In its earlier phase, there occurred also some painted or incised sherds with a red or buff slip. With the later phase were associated burials in urns for infants and extended burials in pits for adults. The uppermost culture, dating from the middle of the first century A.D., overlapped the megalithic in the lower levels but was all the same distinct, characterized by the use of a sophisticated pottery, often decorated with varieties of simple rectilinear or slightly curvilinear patterns in a paste of kaolin or lime under a wash of russet-coloured ochre. This has acquired the name of 'Andhra' ware owing to its occurrence in the Andhra country during the rule of the Satavahana kings.

At Brahmagiri, the results obtained at the excavation at Arikamedu were utilized for working out the date of the 'megalithic' black-and-red ware underlying the rouletted ware.

Proto-historic Cultures

Harappa

Harappa lies in the Montgomery District of west Punjab (now in Pakistan) on an old bed of the Ravi near Harappa Road railway station. About seventy years ago, archaeological operations in the Indus Valley of India revealed at the ancient sites of Harappa and Mohen-jo-daro a new culture which is now known as Indus or Harappan Culture. After this great discovery, the Indus Valley at once took its place with Mesopotamia and Egypt as the home of one of the oldest evolved civilizations of the world. In area, the Indus civilization exceeded its contemporaries in Egypt, Mesopotamia and Iran.

Sir John Marshall tells us: 'One thing that stands out clear and unmistakable both at Mohen-jo-daro and Harappa is that the civilization hitherto revealed at these two places is not an incipient civilization, but one already age-old and stereotyped on Indian soil, with many millennia of human endeavour behind it. Thus India must henceforth be recognized, along with Persia, Mesopotamia and Egypt, as one of the most important areas where the civilizing processes were initiated and developed.' And again he says, 'the Punjab and Sind, if not other parts of India as well, were enjoying an advanced and singularly uniform civilization of their own, closely alien but in some respects even superior to that of contemporary Mesopotamia and Egypt.'

The site of Harappa is bigger than that of Mohen-jo-daro. The mounds lie along the old bank of the river Ravi and form a right-angled triangle with rectangular extensions. Owing to the very thorough depredations of brick-robbers, twelve excavation-seasons at Harappa have, in the aggregate, yielded disappointing results. Nevertheless, it was here that, in spite of the absence of a recovered street-plan, the essential make-up of the Indus cities was first recognized. Furthermore, the excavations have revealed evidence of some pre-Harappan material which shows strong affinity with the Kot Diji material. Again from Cemetery H, we have important evidence of the post-Harappan period. In one way or another, the evidence of Harappa checks and amplifies that of Mohen-jo-daro and broadens the basis of inference.

The vandalism of brick-diggers at Harappa caused one of the greatest losses to the archaeology of the sub-continent. Had Harappa remained intact to the same extent as Mohen-jo-daro, it would have proved a great source of information as well as a significant addition to our knowledge of the Indus Valley culture. However, on a level piece of ground here, which never attracted the attention of the vandals, a cemetery in which the mortal remains of the ancient inhabitants of the Indus Valley have been found, had been uncovered. These skeletal remains give an idea of the people. Animal remains tell us of the beasts that roamed the land.

Excavations here have brought to light fragmentary remains of walls and houses though we have never got anything like complete plans of houses and streets, as at Mohen-jo-daro.

Excavations have revealed that the general lay-out of Harappa was comparable with that of Mohen-jo-daro. The city consisted of two parts: the lofty citadel Mound AB, towards the west; and a much more extensive but somewhat lower part, Mound E, to the east. The citadel mound is a parallelogram. Between the citadel mound and the river-bed stands another mound called Mound F, containing a number of important building remains; to the south of the citadel lie the Harappa period cemetery R 37 and the post-

Harappa cemetery H. To the south-east are the partially excavated area G and the unexplored Mound F.

Inside the citadel area, excavations have revealed six occupation levels one above the other, indicating a long period of prosperity and then of decline.

The excavated building remains in the citadel area indicate that it was thickly populated, but the disturbed conditions made it difficult for the excavators to recognize any intelligent plan of the residential quarters. In the centre of the eastern part, a burnt-brick-covered drain flowed down the street eastwards; a double-ringed well was uncovered on the southern side; and forty large pottery jars lay embedded in ground in a single row by the side of a building.

North of citadel Mound AB, is Mound F. It is about 20 ft. (6.1 m.) high and 300 yards (274.3 m.) square beside the old river-bed. Three important building groups were unearthed here: (i) a double row of workmen's quarters towards the south, close to the citadel, (ii) five rows of circular burnt-brick working platforms towards the north and (iii) the Great Granary beyond (towards the north). These series of buildings show well thought-out planning and it may be that they are of one period.

The roofs of buildings of the Indus Valley cities which were flat and made of wood, reed and mud plaster have all perished. But the solidly built walls, often 5 ft. (1.52 m.) thick, show clearly the lay-out of comfortable and well-designed houses. The average size is 35 ft. (10.675 m.) by 35 ft., comprising several fair-sized rooms grouped round a central courtyard. The majority of houses were at least two storeys high. As one wanders through the doors of these houses, one gets the impression of solid comfort. The feeling is something like walking round a half-built house and trying to work out what the various rooms would be used for. Here is a bathroom with its circular well and smooth-paved floor sloping off to the bricked-in drain which leads to a large covered drain flowing down the street.

From their foundations, the cities of the Indus Valley appear to have been laid out in accordance with some pre-arranged scheme. The streets run in straight lines, and are crossed by others at right angles. It is, of course, impossible to say whether a civic body or a single official supervised the building activities, but they were evidently in very competent hands. It may be noted that the Indus Valley cities are the earliest examples yet discovered where a scheme of town-planning existed. Everywhere the impression is of order and symmetry. Building regulations seem to have been very strictly enforced, and the greatest care was taken to prevent any structure from encroaching upon the streets. The streets were all aligned from east to west or from north to south for the reason that the prevailing winds always come from north-south quarters.

Nine times, over a period of several hundred years, Harappa was built. The ancient city was finally deserted in about 1800 B.C. due to the shifting of the course of the river Ravi upon the banks of which it once stood.

The most characteristic of all the objects that have been found in the Indus Valley cities are the seals and sealings. The majority of the seals are of steatite stone and bear the representation of an animal and one or two lines of pictographic writing, which does not appear yet to have been conclusively deciphered. The script appears very much the same on all the seals, irrespective of whether they were unearthed at high or low levels of the two cities, which seems to indicate little advance on the part of the people who flourished for over five hundred years.

Iron was still unknown to the people of the Indus Valley. Beautiful copper and bronze domesic utensils, implements and weapons, statues and ornaments have, however, been discovered in large numbers. There is a mirror of copper which, when highly polished, had to do for the still undiscovered glass. There are chisels, axes, saws, knives, spear and arrow heads. A copper razor, like a small rounded chopper with a thin handle, must have needed careful handling on mornings when the hand shook. There are fish-hooks, needles, a copper frying pan and even a dinner dish with a cover.

Shell was extensively used in the manufacture of dippers, cups, ladles, balls, gamesmen, beads, discs and ornaments, and for inlay in wooden objects. It is not known how pieces of inlay were fretted out. The favourite designs included petals, leaf, steeped patterns, cross crescent, heart and eye shapes.

Mohen-jo-daro

The ruins of Mohen-jo-daro in Larkana District of Sind (now in Pakistan) on the right bank of the Indus or Sindhu, from which our country came to be called India or Hindustan, lie some 12 km. to the east of Dokri railway station. They present to us a highly developed urban civilization which was at its peak in the second half of the third millennium B.C.

With the discovery of Mohen-jo-daro in 1922 by Rakhal Das Banerjee of the Archaeological Survey of India, an entirely unknown civilization was brought to light which came to be known as the Indus Valley civilization. Now it is being increasingly called the Harappan culture after the type-site.

At the huge site of Mohen-jo-daro, where the remains are spread over an area of 240 acres, extensive excavations started in the summer of 1922 by Marshall and his colleagues in the Survey have continued intermittently up to the present day and archaeologists of fame like Mackay (1927-31), Sir Mortimer Wheeler (1950) and George F. Dales (1964-65) uncovered a vast area of structural remains and reaped a rare harvest of cultural wealth giving invaluable information about the origin, life-history and decline of the city.

The houses were made of kiln-burnt bricks and an average middle-class house consisted of a courtyard, a couple of bedrooms, a kitchen, a bath and store-room, while an upper class house had a few more rooms, specially a guest-room towards the outside. Some of the houses were double-storeyed and access to the upper storey was obtained by means of a well-built flight of steps.

The authority that carried on the administration of these well-managed cities must indeed have been a very strong one. Until recently, it was believed that the Harappan civilization was the earliest essay in the democratic form of government. But the discovery at Harappa of a citadel amidst a large habitation-area points to some sort of 'citadel-rule', whether priest-ridden or monarchical.

The remains of Mohen-jo-daro (the mound of the dead) fall into more or less two distinct parts: the lower and the upper. The upper city, close to the Archaeological Museum of Mohen-jo-daro, is an oblong mound of which a considerable portion has been exposed to view. It comprises the Great Bath, the Great Granary, the Pillared Hall and a number of other structures arranged in rows divided by lanes and bylanes. The remains of the ancient civilization are topped over by an imposing Buddhist *stupa* of the second century A.D., rising 72 feet above the surrounding plain to dominate the scene.

The lower city lying further to the east is an extensive mound of undulating surface, of which three large portions have been excavated. The

exposed areas show extensive remains of residential quarters arranged in blocks neatly divided by streets and lanes.

For purposes of easy reference and convenient delineation, the excavated portions of Mohen-jo-daro have been divided into areas, each named after the officer who carried out the excavation work in that sector:

(1) Stupa area	R.D. Banerjee and B.L. Dhama under the supervision of the Director General
(2) S.D. Area	A.D. Siddiqui
(3) L. Area	Dr. E.L. Mackay
(4) H.R. Area	H.Hargreaves
(5) U.S. Area	M.S. Vats
(6) D.K. Area	K.N. Dikshit.

The most striking feature of the cities of Harappan culture is their systematic lay-out. At Mohen-jo-daro, where the picture is better preserved, we can see that the main thoroughfares cut one another at right angles and the smaller streets and lanes follow suit. Throughout the occupation at Mohen-jo-daro — a period in no case less than one of five hundred years — the original plans were vigorously kept up. A. Ghosh observes: 'The well-regulated underground drainage system again speaks very highly of the civic authorities. One is surprised to find that such a system of town-planning did not exist in contemporary cities of the Middle East, which, in certain other respects, were considerably advanced.'

The Great Bath at Mohen-jo-daro calls for special attention. Constructed of burnt-bricks, it was 39 ft. (11.89 m.) long, 29 ft. (8.89 m.) wide and 8ft. (2.44 m.) deep, with steps leading down to the floor. Along its perimeter were small rooms evidently intended to be used for bathing. The exact significance of this bath is not known. It is surmised that it was attached to a religious building which probably existed below the Kushan *stupa* in the neighbourhood. This presumption, however, needs confirmation or modification by excavation, which is only possible if the *stupa* above is dismantled. Another building which stands out by itself is the hundred-pillared hall. It may have been used for public or religious assemblies.

Among the noteworthy specimens of the Indus Valley sculpture may be mentioned a fine bearded male figure wearing a shawl with three-petalled ornamentation from Mohen-jo-daro.

The chemical analysis of metal and alloy specimens from Mohen-jo-daro and Harappa has led to important and interesting results. It showed that the ancient craftsmen had attained a very high degree of skill in metallurgy. Bronze was known and used on a fairly large scale, while the technique of casting and working had also been developed.

Marshall compares and contrasts the Harappan civilization with those of contemporary Egypt and Mesopotamia: 'Thus, to mention only a few salient points, the use of cotton for textiles was exclusively restricted at this period to India and was not extended to the western world until 2,000 or 3,000 years later. Again, there is nothing that we know of in prehistoric Egypt or Mesopotamia or anywhere else in Western Asia to compare with the well-built baths and commodious houses of the citizens of Mohen-jo-daro. In those countries, much money and thought were lavished on the building of magnificent temples for the gods and on the palaces and tombs of kings, but the rest of the people seemingly had to content themselves with insignificant dwellings of mud. In the Indus Valley, the picture is reversed, and the finest structures are those erected for the convenience of the citizens.'

Life seems to have been quite gay and happy, as is reflected in the variety of ways in which the womenfolk of Mohen-jo-daro dressed their hair and bedecked their person. There were diversions too like playing dice and hunting wild beasts. The youngsters played with marbles, rattles and other toys, some of which may be noted for their ingenuity.

The Indus people knew reading and writing, the script being pictographic. Some scholars now claim to have solved the puzzle of this script, but it appears that the script has not so far been conclusively deciphered.

In trade and commerce, the Harappans had advanced considerably. Merchandise was carried as far west as Sumer, where seals of Indian style have been found mainly in the Akkadian (2370 B.C.), but also a few in pre-Akkadian and post-Akkadian levels.

The urban civilization flourishing in the Indus Valley had contacts with the contemporary cities of Iraq. At Ur and its sister-cities, objects made by craftsmen of the Indus Valley have been found from time to time. On the other hand, typically foreign objects found on the Harappan sites bear witness to intercourse between the Indus Valley and Mesopotamia and perhaps Asia Minor, e.g., spiral-headed hairpins, cylindrical seals with horned deities, etched carnelian beads, fragmentary vessels of steatite with a mat-pattern, spiral needles, stone jewel-boxes with compartments inside, heart-shaped pieces of bone-inlay and knobbed pottery.

This grand picture of the earliest civilization of India is still incomplete since it is devoid alike of genesis and of decay. Either flood or some other catastrophe brought about an end to these cities some time in the second quarter of the second millennium B.C.

The ruins of Mohen-jo-daro are in danger of becoming completely waterlogged, and the salt released from the ground is attacking the bricks, turning them into powder. Possible serious flooding from the mighty Indus river nearby poses an additional threat. To save Mohen-jo-daro from final destruction, the Government of Pakistan and the UNESCO plan to start work on a \$ 14-million scheme to preserve for posterity this outstanding monument of mankind's earlier aspiration and advance towards a mature civilization. India is assisting in kind in conserving this unique cultural heritage of the world.

The importance of a world-wide effort to preserve Mohen-jo-daro, one of the most important and distinctive monuments in the world, is quite obvious. Twenty-seven wells sunk at the site have lowered the water table to nine metres below surface. Protective banks have been built to shield the ruins from the river. The danger through efflorescence of salt by capillary action has increased manifold and is, in fact, threatening the existence of the exposed structures. The master plan prepared by a UNESCO mission of experts including those from Pakistan dwelt on three problems: (i) ground water control; (ii) protection against the river Indus and (iii) physical conservation of the structural remains. UNESCO has provided technical expertise and some assistance and a private Pakistani effort aims to raise 10 million dollars to save Mohen-jo-daro.

Kalibangan

Kalibangan, District Ganganagar, which was in occupation even before the appearance of the Harappan culture, lies on the left bank of the now-dry bed of the river Ghaggar (the ancient Saraswati) amidst the rolling sand-dunes of northern Rajasthan. It is situated about 310 km. north-west of Delhi. Besides providing fresh light on the origin of Harappan culture, the

excavation, which was conducted by B.B. Lal, B.K. Thapar and J.P. Joshi of the Archaeological Survey of India for seven seasons, has pushed back in time-range the beginnings of Indian proto-history. The technical excellence in excavation achieved at this site by these eminent archaeologists remains unsurpassed so far in the subcontinent.

The ruins comprise two closely situated, yet separate mounds, the larger to the east and the smaller to the west, recalling identical disposition of the mounds at Mohen-jo-daro and Harappa.

The complete plan of the Harappan settlement has been recovered. The settlement consisted of two parts: (i) the citadel to the west and (ii) the 'lower city' to the east. Both these parts were separately enclosed by fortification-walls. The citadel was divided into two roughly equal halves by a partition-wall. The southern half contained about half-a-dozen mud-brick platforms, each separated from the other by passages showing elaborate drainage. The superstructures above these platforms had all been despoiled, but from the remains of wells and 'fire-altars' of some of these, it can be inferred that these at least were meant for ritualistic purposes. The northern half of the citadel contained residential blocks, perhaps intended for the elite. The 'lower city' showed a grid-plan with thoroughfares running north-south and east-west. To the south-west of the citadel was the cemetery. Excavations brought to light three modes of burials: (i) extended inhumation normally met with at other excavated Harappan sites; (ii) pot-burials with circular pits; and (iii) rectangular or oval grave-pits without, however, any skeletal material. It may be mentioned that in the second variety, none of the pots contained any skeletal material.

B.K. Thapar writes: 'The lower city had a grid of streets which divided the area into blocks. Four arterial streets running north-south and three running east-west have been uncovered and it is surmised that the unexcavated northern portion of the city may contain more.

'To avoid injuries from busy vehicular traffic, wooden fenderposts were provided on some of the street-corners. There has so far been no evidence of regular street-drains. House-drains, which were either of wood or of baked brick, discharged themselves into storage-jars buried in the street-floor, a practice which anticipated the modern septic tank.'

Below the citadel were found the remains of a pre-Harappan settlement, which incidentally was also fortified. The pre-Harappan settlement (Period I) was identified only in the lower levels of the western mound. Evidence regarding cooking practices revealed by a series of ovens both of underground and overground varieties, very closely resembling the present-day *tandoors*, which are commonly used in the region, is interesting. Belonging to this pre-Indus period (the first half of the third millennium B.C.) was an agricultural field, ploughed on a grid pattern. This is perhaps the earliest ploughed field so far excavated anywhere in the world. The present-day ploughing pattern shows, curiously enough, an arrangement of furrows similar to that encountered in the excavation. Indeed, tradition dies hard!

Thapar observes: 'It was the pottery which gave this antecedent culture its distinctive personality. The more characteristic wares included: (i) a carelessly-potted red ware showing painted designs in black, combined at times with white over a dull-red surface, the dominant design being bands, loops, symmetrically-joined arches, latticed triangles, etc. (ii) carefully-potted red ware showing a rusticated or roughened surface on the lower part of the vessels and (iii) sturdy red ware, mainly represented by basins showing all-over obtusely-incised patterns on the inside and single or multiple rows of cord-

impressions on the outside. It is noteworthy that some of the forms and painted designs amongst these fabrics are comparable with those from other pre-Harappan sites in Pakistan like Kot Diji, Amri, Quetta, etc., and from the pre-defence deposits of Harappa.

'Other finds of this assemblage comprised: small-sized blades, mostly of agate, chalcedony, etc., sometimes serrated and backed, shell bangles, terracotta objects including bangles and toy-cart wheels and bulls, and stone-querns with muller. The use of copper axes, bangles, etc., fully attests the knowledge of metallurgy.'

Among the finds recovered from the Harappan levels (Period II), both at the 'citadel' and the 'lower city', were the attractively-painted and gracefully-shaped pottery, long chert blades and cores, personal ornaments like beads, various semi-precious stones, faience and steatite and bangles of shell and terracotta, household tools of copper and bronze, 'terracotta cakes', feeding-bowls, toy-carts, figurines of animals and birds, gamesmen, etc., cubical weights of chert, and seals and sealings. Among the terracotta objects, an outstanding find was a bull showing masterly modelling of the body and the rendering of the dynamic mood of the animal with its head and dewlap, closely resembling the one from Mohen-jo-daro. A cylinder seal, a graduated scale intended perhaps for measuring and a terracotta cake incised both on the obverse and the reverse with some elusive figures deserve special mention.

'Whether this pre-Harappan culture more appropriately designated the Kalibangan culture, which has been found to be quite widely diffused,' observes Thapar, 'stands in parental position to the Harappan cannot at present be positively affirmed. Further field-work, both here and at other sites in Sind and Baluchistan in Pakistan, would solve the problem.'

The beginning of the pre-Harappan culture, Period I, according to C-14 determination, falls between 2900-2700 B.C. (calibrated) while that of Harappan, Period II, between 2500-2000 B.C. (calibrated).

Lothal

The discovery by Dr. S.R. Rao of the Archaeological Survey of India of the remains of a full-fledged Harappan settlement at Lothal (meaning: mound of the dead) in Ahmedabad District of Gujarat State has added a new chapter to the history of India by extending the geographical limits of the Harappan civilization as far south as the Gulf of Cambay. 'For the first time,' observes Rao, 'the circumstances leading to the survival, degeneration and devolution of the Harappan civilization in a relatively isolated region like the peninsula of Kathiawad have been made known.'

The excavations, which were started in 1955-56 by Rao, assisted by Dr. Suraj Bhan and K.M. Srivastava, have forged a link between the Harappan civilization and the late chalcolithic cultures of the first millennium B.C. as made known to us at Maheshwar in the Narmada valley, Nagda in the Chambal valley, Ahar in the Mewar plateau, Bahal and Prakash in the Tapi valley and Nevasa in the Godavari valley. A continuous culture sequence, without any break, has been established from the time the Harappans arrived at Lothal in *circa* 2500 B.C. up to the emergence of the Lustrous Red Ware culture from the degenerate Harappan culture at Rangpur, in the first millennium B.C. It may be noted that the Harappans had followed a *maritime route* to reach Saurashtra. The importance of the sequence in throwing new light on the dark age of Indian history cannot be exaggerated.

Lothal is the name of a mound in Saragwal village of Dholka Taluka

approachable from Bhurkhi, a railway station on the Ahmedabad-Botad metre-gauge section of the Western Railway. It is situated in the rich cotton-and-wheat-growing region of Bhal. The nearest point from the sea is about 16 km. as the crow flies. Rao observes: 'With a rich hinterland and easy access to the sea, Lothal must have attracted the seafaring and commercially-minded Harappans with prospects of trade with Saurashtra. It was not a mere port where the local inhabitants and the Harappan exchanged their goods but a full-fledged Harappan settlement. As we shall presently see, Lothal can be considered a *miniature Harappa*.'

The excavations revealed three main phases of occupation represented by a total habitation debris of 22 feet with five building periods.

In order to prevent inundation by the overflowing rivers, the Harappans had to devise a measure of safety by building platforms, unmindful of the labour or cost involved. The excavations at Lothal revealed that every time the flood rose above the previous level and damaged structures built over platforms, the height of the platform was raised and houses were built over them once again. There were floods at least four times during the occupation of Lothal and one of the severe floods caused a breach in the clay filling and damaged the platforms, which forced a part of the population to move further into the interior to Rangpur. In addition to these platforms, another important structure laid bare at Lothal is considered to be a kiln.

Rao writes in his paper 'The Excavations at Lothal': 'Among other important structural remains, there are three rectangular kiln-burntbrick structures which were found to contain animal bones, beads of copper and faience, terracotta bangles and earthen vessels. In one of them, charred bones, a gold pendant and beads have been recovered. These structures seem to have served a ritualistic purpose.

'The houses were built of kiln-burnt or mud bricks and each house had a bath and a drain with soakage jars at its end. In most of the houses, circular and rectangular fire-places were found to contain ash and triangular terracotta cakes. It is suggested by certain scholars that they indicate places where rituals were performed. Houses were built in a straight line and there were public drains to carry sullage water from baths. Personal ornaments, tools and weapons, toys and domestic objects and seals and sealings found in large numbers at Lothal are identifiable with those of the type-site Harappa. The main occupations of the inhabitants were agriculture, fishing and trade, as suggested by copper fish-hooks and agate and chert weights. It is interesting to find that the weights conform in size and weight to the standard obtained in the Indus Valley. Earthern vessels, beads, terracotta bangles and chert blades were locally made. The pots were thick and sturdy and the colour scheme adopted for painting them is pleasing. Usually, black colour was used over a red surface and occasionally chocolate over a buff background can also be seen. Bowls, goblets, beakers, troughs, perforated jars and dishes-on-stand are common pottery forms. Another distinct ceramic ware, namely, Black and Red Ware, has enhanced the importance of Lothal in forging a link between the Harappan civilization and the chalcolithic cultures of Central India. The vessels in this ware have a black interior and red exterior. It is now certain that the technique of inverted firing was known to the Lothal folk. The same technique, continued in later times by the Harappans and their successors at Rangpur, came into great prominence in the Ist millennium B.C.'

Examples of unexcelled craftsmanship are about five lakh steatite and faience beads and a thousand gold beads smaller than a pin-head in size and

carefully cut with a fine instrument. Toys such as carts, terracotta animal figures, marbles and miniature earthen vessels were known to the Lothal children. A number of gamesmen of shell, ivory and terracotta found at Lothal are suggestive of the games they played. Earthenwares and copper vessels, querns, mullers and pestles of stone give us an idea of the objects of domestic use of the time.

Lothal has brought to light a burnt-brick dockyard, which is the most important structure unearthed at the site. Rao observes: 'It is unique in conception, being the earliest example of constructing an artificial enclosure for handling cargo and berthing ships. It presupposes a sound knowledge of hydrography and maritime engineering. The Lothal engineers must have studied the effect of tidal waters on brick-built structures, for, they took necessary precautions against erosion and thrust. The devices they adopted for automatic desilting and water-locking are admirable. The basin of the dock measures 219 metres north-south and 37 metres east-west. It is enclosed on all sides by walls of kiln-fired bricks, the maximum extant height being 4.5 metres. The excavated earth was used partly for making millions of bricks needed in the construction of platforms and partly for filling the gaps in the acropolis and elsewhere. Ships entering the Gulf of Cambay were sluiced into the basin at high tide through a channel which is 7 metres wide and 2.5 kilometres long. It joins the eastern embankment at the inlet gap. Scouring effect of the tidal water was stopped by building two brick walls, one on either side of the inlet gap. Ships had to enter and leave the basin at high tide when the water level was maintained sufficiently high above the inlet sill. The second channel noticed in the southern embankment runs at right angles to it. The vertical grooves on either side of the channel at its junction with the embankment were meant for inserting a wooden door with a view to closing the spillway — for maintaining the required water level in the basin. The channel could also be closed during repairs. Some more grooves noticed at regular intervals in the side-walls of the spillway must have been weepholes. To counteract the thrust of water inside the basin, the enclosure walls were supported on the outer face with 2 to 13 metre-wide platforms of mud-brick. The platfom on the western side, measuring 240 metres long and 23 metres wide, was used for hauling goods. Living quarters for workers were built on the northern platform.'

According to tradition also, Lothal was a port till recently, as borne out by the worship of Vanuvcati Sikotarimata, the goddess of the sea, on the warehouse mound overlooking the dock.

The tools of the Lothal folk consisted of chert blades used as penknives, copper razors, copper pins and knives and needles of ivory and bone. A beautiful figurine of a god in copper found here is an excellent example of the art of metal-casting. The artist at Lothal had a good grasp of the elements of form and decoration. The life-like representation of animal figures such as unicorn, elephant, bull, goat and bird on the seals and sealings of Lothal in a space of one inch square or even less bears testimony to the skill of the artist. There are many complicated geometric and naturalistic designs painted over and over again on the surface of the vessels without variation from panel to panel.

A unique practice noticed in the third phase is the joint burial of which three examples may be cited.

The entire range of objects found at Harappa was obtained from the excavation at Lothal also, even though the area under excavation was

extremely limited. Seals and sealings were found in large numbers. A majority of them bear the Indus script and the unicorn.

About the foreign contacts which Lothal had developed, Rao observes: 'A word must be said about the trade contacts Lothal had, especially with the cities of the Sumerian and Elamite civilizations, although it was not culturally influenced by them to any appreciable degree. Lothal must have imported copper ingots from Susa, since similar ingots are found at both the places. Lothal has yielded a copper amulet with bull figure, similar to the one from Susa D, where etched carnelian beads and an Indus seal have also been found. Indus seals, a cubical weight of chert and segmented beads of faience characteristic of Harappan culture, are noticed at Kish. Brak has yielded disc beads of steatite. It is interesting to find Reserved slip ware and a terracotta sealing with *swastika* design in multiple lines at Lothal, both of which occur in the Sargonid levels of Brak. Maximum trade contact is, however, traceable between Lothal and Ur. Besides several Indus seals, the etched carnelian beads and segmented faience beads found at Ur suggest close contact with the Indus Valley. Lothal and Ur have yielded identical objects such as sherds of Reserved slip ware, gold beads with axial tubes, bull-amulet and a circular steatite seal of Persian Gulf origin. A joint burial was also noticed at Ur. The clay tablets of the Larsa period from Ur make mention of the merchants returning from Telumn or Dilmun, Magan or Makkan and Meluhha, offering a portion of the goods at the shrine of Ningal. The imported goods included ivory and shell objects and stone beads for which Lothal is famous. Lothal had maximum trade contact directly with Ur in the Sargonid Period. Perhaps, later on, the merchants of the Persian Gulf acted as intermediaries, which is suggested by the occurrence of the Persian Gulf seal at Lothal and similar types of seals with Indus characters and motifs at Ur. The Lothal seal has two jumping gazelles flanking a two-headed dragon on the obverse and a large boss, four circlets and three grooves on the reverse.

The religion of the folk who inhabited Lothal is not known. The great public bath of Mohen-jo-daro and the numerous small baths of Lothal suggest that bathing was an important ritual or a great necessity.

Lothal is the beginning and not the end of the story of the spread of Harappan civilization. A part of the Lothal population had moved further into the interior to Rangpur some time in the beginning of the second millennium B.C. The excavations at Lothal and Rangpur have demonstrated that this civilization did not come to a sudden end, as hitherto believed, but survived in a degenerate form up to the beginning of the first millennium B.C. and transformed itself into another culture.

Banawali

Banawali in Fatehabad tehsil of District Hissar in Haryana is located on the northern bank of the shallow and wide depression of the storm-water drain, locally known as the Hakra Ban, Rangoi, Nadi or Nali, but originally the old bed of the Saraswati. The mound, over 400 m. square, rises to a height of about 10 m. from the surrounding area. The excavations carried out by R.S. Bisht from 1974 to 1977 and 1982-83 to 1983-84 have brought to light a three-fold culture sequence.

PERIOD I: PRE-INDUS CULTURE

The habitation of the Period resting directly over the alluvium is restricted to south-western quarter of the mound. With a thickness of about 3 m., the habitational deposit bears an overall likeness to that of Kalibangan I. The first

stage of constructional activities was represented by two structural phases related to 0.60 to 0.80 m. deposit overlying the yellowish brown soil. The fortification around the Pre-Indus settlement was raised in the second stage delimiting the habitation. The cultural debris having a thickness of about 1.60 m. represented the second stage. The succeeding deposit of 0.90 m. represented the transitional stage between the Pre-Indus and Indus Cultures having three structural phases.

The structures of this Period were normally built of sun-dried bricks with a ratio of 3 : 3 : 1 measuring 30×30×10 cm., 27×27×9 cm. and 24×24×10 cm. The house-walls were built of half bricks, single bricks and two bricks in thickness and provided with mud-floors, *tandoors,* small ovens, hearths, large circular corn-silos and smaller pits, both clay-lined and plain. The silos or pits had straight vertical sides and flat base. The houses exposed were found oriented to north-south and east-west. The entire settlement of the Pre-Indus Period was noticed to be oriented oblique to the north-south axis.

On the basis of meagre excavated data supported by surface indications, the fortified settlement seems to be oblong oriented oblique to the cardinal axis enclosing an area of about 4.5 hectares. The fortification wall with a thickness of about 3.60 m. at the top was constructed right on top of the structures of the earliest stage.

The ceramic assemblage has recorded all the six fabrics previously identified in pre-Harappan Period at Kalibangan, comprising identical pot-forms and majority of decorative motifs. In addition, pottery lugs and loop handles were also found. Incised decoration of shallow multiple wavy or vertical lines, deep-cut sigmas or casually done criss-cross patterns executed on the exterior were found to be the usual decorative elements.

Bone tools comprising points and awls were found predominant over the copper which was scarce at Banawali. Terracota, shell and faience bangles having triangular, square and circular sections, beads of gold, semi-precious stones, faience, shell, bone and terracotta, animal figurines, clay-balls and stone pebbles are the important finds of the Period. Objects deserving a particular mention include a sherd depicting a canopied cart with spoked wheels, sherds engraved with fingernail marks at the base and a stone weight.

The transitional phase was represented by a mixed cultural milieu characterised by a dominant pre-Indus ceramic and appearance of a new red ware bearing deep red slip decorated with new motifs and proto-Indus pot-forms..Though the structures followed the general lay-out of the pre-Indus Period, new architectural elements were found introduced as indicated by the use of bricks having different proportions conforming to that of mature Harappans. The phase also yielded triangular cakes, animal figurines, chert blades and some other objects which later on became characteristic of the succeeding Period.

PERIOD II: INDUS CULTURE

Following the transitional phase, the full-bloomed Indus Culture made its appearance at the site with its unique town-planning and diagnostic traits and spread in an area approximately twice the size of that occupied in the pre-Indus Period. The entire Indus township was secured by a massive fortification with a fortified acropolis and lower town within. Evidence of bastions towards the north-western and north-eastern corners too was substantiated in a limited dig. The extant thickness of the eastern wall varies from 5 to 7 m. with an average thickness of 6 m. The diggings also indicated that the wall was constructed at least in two distinct phases. Elaborate gate-complex exposed a

little towards north of the centre of the eastern wall was the significant *contribuion of the excavations at Banawali.* It was provided with a frontal moat flanking bastions and an 8 m. wide passage, constructed with a long drain, a tie-wall and a flight of steps leading to the southern bastions. Built of baked-bricks, the drain and the tie-wall indicated their construction in two phases. The fortification has a distinction of having a berm between the former and the moat. The moat measured about 6 m. in width and 3 m. in depth.

The bipartite wall which, in fact, fortified the acropolis runs parallel to the corresponding wall of the outer defences up to half the length roughly along the north-south and then takes a turn towards north-east in a large curve.

The acropolis located within the outer fortification on the higher ground over the remains of preceding period is towards the south-western quarter. Between the two squarish bastions on the eastern wall there was exposed a 1.5 m wide opening with a pucca drain which most likely served as postern entrance and a storm-water drain. Regular roads and a well-defined road system were also encountered within the acropolis.

The lower town revealed a unique example of town-planning conceived of a bilocular settlement within a general fortification. The street-system was found to be rather radial contrary to the usual rectangular as known from other excavated Harappan sites. Cart-ruts observed on streets indicated that probably the vehicular traffic was allowed inside the town.

The houses were in general large and spacious having a number of rooms and a courtyard. One of the rooms which yielded the famous inscribed seal depicting the horned tiger was found paved with mud bricks. The toilet of the house was also provided with a washbasin placed on a higher plane in a corner near the drain which was connected with a sullage-jar placed outside on the street. The houses were generally provided with a room containing a square fire place, with or without bricklining, but with a longish cone of clay in the centre. The walls of the houses were found plastered with mud, mixed with ash, straw and cowdung. The excavations have brought to light about five to six structural phases and interestingly, the original lay-out was most zealously found maintained throughout.

At Banawali, similar to Kalibangan, the Indus people used bricks of larger size in the construction of the fortification whereas the smaller ones were used in other structures. They also strictly maintained the standard ratio of 4 : 2 : 1 between length, breadth and height in bricks. Baked bricks were used only in drains, both public and private, or in those structures which were meant to negotiate strong water action.

Apart from principal pot forms and the decorations thereupon, three other distinct wares of separate origins were also found from the excavations. The pre-Harappan fabrics C and D appear to have gradually merged with Indus wares as indicated by remarkable resemblance in technological finesse and general appearance. Fabrics A, B and E also appeared in the Indus Period after due transformation during the Intermediate Phase, red ware sherds with unusually thick and heavy fabric and a subdued oily surface recalling family likeness with Bara ware and dull red ware with poor matt surface represented the other non-classic Harappan ceramic assemblage at Banawali in the Indus Period.

Among the important finds of the Period, mention may be made of steatite seals, a lapis-lazuli, etched carnelian, faience and steatite beads, terracotta figurines of mother-goddess and animals, pieces of gold ornaments, terracotta model of a plough, cubical weights, stone and ivory gamesmen,

terracotta and faience bangles, copper arrowheads, spearheads, chisels, rings, double spiraled and simple pins and fish-hooks, terracotta toy-cart frames and wheels.

Bisht observes: 'It is noteworthy that the pre-Indus ceramic tradition at Banawali continues throughout, whereas at Kalibangan, it dies out half-way through. This possibly explains the presence of an assorted pottery discovered all over Haryana and also the cause of racial fusion and cultural transformation in Haryana.

'The seals found at Banawali again proved the superb craftsmanship of the Harappan artists. It is possible that they might have been used for sealing packages of commercial goods or as passports or tokens of identity. It is also possible that they were used as merchants' trade-marks and not just as royal ensigns. The seals hitherto recovered from Banawali depict a rhinoceros, ibex, wild goat, unicorn and a composite animal with a tiger's body and a bull's horns, besides short epigraphs which are still a closed book.' Harappan cubical weights and gamesman type of weights made of stones and ivory or bone revealed a great degree of precision.

Gold, copper and bronze pieces indicated that these people had a profound knowledge of metallurgy.

Among ornaments were found beads of gold, copper, agate, carnelian, lapis lazuli, faience, shell, bone and clay, bangles of copper, and terracotta and *pipal* leaf-shaped ear-rings of faience.

Certain figurines of the mother goddess and the like suggest that the Harappans were very fond of decorating their person with elaborate headgear, ear-rings, necklaces, garlands, etc.

Copper and bronze were used for weapons and tools as also for ornaments. The items included arrows, spearheads, razor blades, chisels, fish hooks, beads, rings, bangles, antimony rods, wires and hair pins. Iron, however, was not known to them.

Terracotta figurines of bulls, buffaloes, deer, dogs, rhinoceroses and birds are not only the evidence of their folk art tradition, but also throw welcome light on the fauna of those bygone days.

Surplus food production in the fields and the cattle farms, hunting and fishing helped bring about a great urban revolution leading to the emergence of a complex society of specialized tradesmen, skilled and unskilled labourers and workers during the Harappan times.

These excavations contributed greatly towards an understanding of the development of this society from its beginning through a proto-urban stage to a fully urban civilization.

PERIOD III: POST-INDUS CULTURE

After the desertion of the site by the Harappans, a deposit representing post-Indus Culture was found at Banawali. As indicated by the material unearthed, the post-Indus people settled down in the east but outside the fortified settlement of the Indus Period. On the main site, these post-Indus people dug up only large and deep pits to dump the broken pottery or refuse. The settlement of the Period was found towards the east over the graded down-wash brought by erosion of the mound. The cultural deposit is explicitly devoid of all urban autributes and the classic, diagnostic objects of the preceding period. The excavations brought to light three structural Phases during the period. Bricks were no longer the popular building material as the houses were found constructed of packed earth. Interestingly, large under-ground silos and small pits meticulously cut and perfectly circular with vertical

straight sides recalling the pre-Indus tradition were laid bare during the excavations. Cornbins made of clay as well as lime and *tandoors* and ovens were found in almost every house.

The ceramic indusry of the Period is represented by a well-fired sturdy and heavy ware of fine clay with deep-toned slip having an oily gloss. Interestingly, the ceramic shows a strong genetic relationship with the pre-Indus and Bara Pottery The typical Indus Pottery types and designs totally disappeared, but utilitarian pots having roots in the pre-Indus Period survived. Among the principal shapes, mention may be made of dish-on-stand, small and large-sized vases, small and medium-sized vessels, dishes, cooking vessels, baking plates, bowls and lids. Besides these, a dull red ware, very light coarse and porous in fabric and devoid of slip but decorated with incised and or applique designs, has also been found.

Of the important finds, mention may specifically be made of bangles, anklets, rings, beads and *pipal*-leaf-shaped ear-rings in faience, biconvex *idlis,* longish nodules, balls and objects having flat square base with pronounced cavity on all the four sides in terracotta.

Dholavira

Dholavira is one of the two largest Harappan settlements discovered so far in India—the other being Rakhigarhi, District Hissar, in Haryana—and it ranks among the first five Harappan cities, the other three being in Pakistan—Mohen-jo-daro in Sind, Ganweriwala in Bahawalpur and Harappa in West Punjab. Dholavira is a modest village in Bhachau taluka of District Kutch in Gujarat. It is situated in the north-western corner of the Khadir which is a large island surrounded from all sides by the Great Rann of Kutch.

The proto-historic mounds here were first discovered in 1967-68 by Jagat Pati Joshi of the Survey. He made preliminary investigations at Dholavira and declared it to be the largest Indus-settlement in India. Further work of area-survey and surface study carried out by R.S. Bisht of the Excavation Branch of the Survey, Vadodara, and his team amply demonstrated that it was far much larger and far more multi-divisional city-complex, having even suburban establishments of meticulous planning.

The present excavations being conducted at the site by Bisht and his team have since confirmed the salient features of city-planning observed earlier besides providing a stratigraphic sequence starting from pre-Harappan to early Harappan, late Harappan and post-Harappan periods through an enormous regular occupational deposit of 12 m. obtained at the citadel mound.

The first occupants of the site were the Pre-Harappans of Amri association, who seem to have settled here sometime in the 3rd millennium B.C. They had left behind a 60 to 70 cm. deposit. They were familiar with the use of moulded bricks measuring 36 × 18 × 9 cm. and manufacture of wheel-made pottery of diverse fabrics decorated in different styles. They had also acquired technical know-how of copper working and stone-dressing. Exposure of a huge mud-brick fortification wall, extant to a height of 6.30 m. with an upward taper of 75°, was found to be successively plastered with bright clays of white to pink hues. The Harappans came there quick on their heels and used that wall. After a century or so, the Harappans added from the inside a 5 m. wall with an elevated walk to the existing defences. Sometime during the early mature phase itself and surely subsequent to the first addition, the city experienced a severe earthquake. According to Bisht, 'at some point of time during the Harappan period, the city suffered extensive damage caused by a

natural catastrophe—an earthquake or a geotectonic movement of great intensity and suddenness. The evidence may clearly be seen in the defences which were reconstructed on a large scale and provided with a veneer of ashlar masonry.'

For over nine metres deposit, which is indicative of a considerable duration, the Indus culture maintained its classical character in all spheres before decline set in. The decline coincides with the arrival of a new set of people, quite probably from Sind. They, however, continued the classical traditions for some time and carried out repairs to the defensive system, albeit with inferior workmanship and unaesthetic changes. Decline became more rapid probably following the desertion of the city by the ruler as well as the elite. Those who stayed and kept on industrial activities could not live there for a longer period. After a short desertion, a new group of people appeared on the scene. Unlike their forerunners, they lived in circular stone houses which are still in vogue in Kutch and are locally known as *Kudas*. Yet, they were using the same ceramics and other items which their predecessors did. After this post-urban nomadic phase, the site was never reoccupied.

Bisht observes: 'Much of forethought and imagination must have gone into the planning and construction of the city. Astoundingly, in planning of the city, the magnetic orientation was maintained, 6° off the cardinal direction, as seen by the modern day compass. Such an astronomical precision is no mean achievement. The city proper was conceived as a perfect rectangle bounded by massive mud-brick masonry wall. Internally it measured 770 m. from east to west and 616 m. north to south yielding the ratio of 5:4, precisely what works out in respect of the castle as well. Inside the walls, there is evidence of three principal divisions which on the basis of their relative location and suggestive layout have been named as 'citadel', 'middle town' and 'lower town' which bear correspondence to the Rigvedic terms, viz. '*parama*', '*madhyama*' and '*avama*'. Significantly, the first two divisions, viz. the 'citadel' and the 'middle town' have their separate yet interconnected fortification system, whereas the lower town has not so far shown any such provision, albeit all three are within the general fortification. The citadel contains two conjoint subdivisions both secured by walls. The higher one which is in the east is most carefully constructed and zealously guarded by considerably thick and lofty walls which are pierced through by two gateways that have been laid bare and are very ostentatious and elegant monuments. Each is furnished with a flight of steps leading to a long passageway flanked by two elevated chambers and then with a broad and lofty terrace in the front. Each of the two side-walls of the sunken passageway support a set of highly polished blocks at either end and an equally polished pillar base shaped like a reel or 'damaru' in the centre. The shaft portions are missing in all cases although some circular pillar elements have been found removed to a later workshop by the post-urban folks. The north gate is the most majestic and elaborate of all. It overlooks a broad and open space which separates it from the fortified middle town. Interestingly, this open space is found nicely levelled and floored successively by the occupants who maintained it as such all through their period of prosperity. It appears that this space was used for royal, social or/and religious congregation presided over by the supreme authority seated in the chamber of the north gate. Such a design of a Harappan gate as well as the use of highly polished architectural members is without a parallel.

'The find of an inscription consisting of nine large characters may indeed be called the discovery of the decade. Each letter is made by arranging several

37×27 cm. This epigraph further enhances the importance of the north gate as well.'

Another significant structure is a large water reservoir provided in the heart of the castle. It is 13 m. wide while the length has been determined for more than 35 m. only. The Harappans laid out a fine network of drains for collecting every drop of rain-water. At one place, a drain covered with slabs and provided with a hole for desiltation and at another place or rather on the defensive wall, water was collected on a stone platform where it flowed to a deep chamber through a polished water-chute. A drain issuing from the chamber led it to the reservoir.

Among important finds are microdrill-bits made out of a hard stone, seals, complete or fragmentary, and seal impressions on clay and one bronze figurine of an animal. Seals bear short epigraphs in the Harappan script and many of them are engraved with unicorns and in one broken piece, there appears to be a syncretic animal. Other finds are: beads of semi-precious stones, gold, copper, shell, steatite, faience and clay; usual copper objects including a pin with two spiral-heads; bangles of stone, shell and clay; terracotta models of cart-frames, wheels, animals, gamesmen, triangular cakes; and a variety of stone querns, grinders, rubbers, polishers, pestles and mortar used for domestic as well as manufacturing purposes.

The present excavation may throw up more questions with regard to locational importance of Dholavira in the context of the settlement network of the Harappans as well as to the Rann and the Sea so that a more concerted effort to seek answers is made in the coming years.

Ropar

Ropar, which has yielded a sequence of six periods with some breaks, from the Harappan times to the present day, is situated on the left bank of the Sutlej in the Punjab at a distance of 96 km. north of Ambala. It was excavated by the Archaeological Survey of India under the direction of Dr. Y.D. Sharma from 1953 to 1955. The material collected from other sites in the neighbourhood indicates a similar sequence over a wider area, so that Ropar may serve as an index for the entire region.

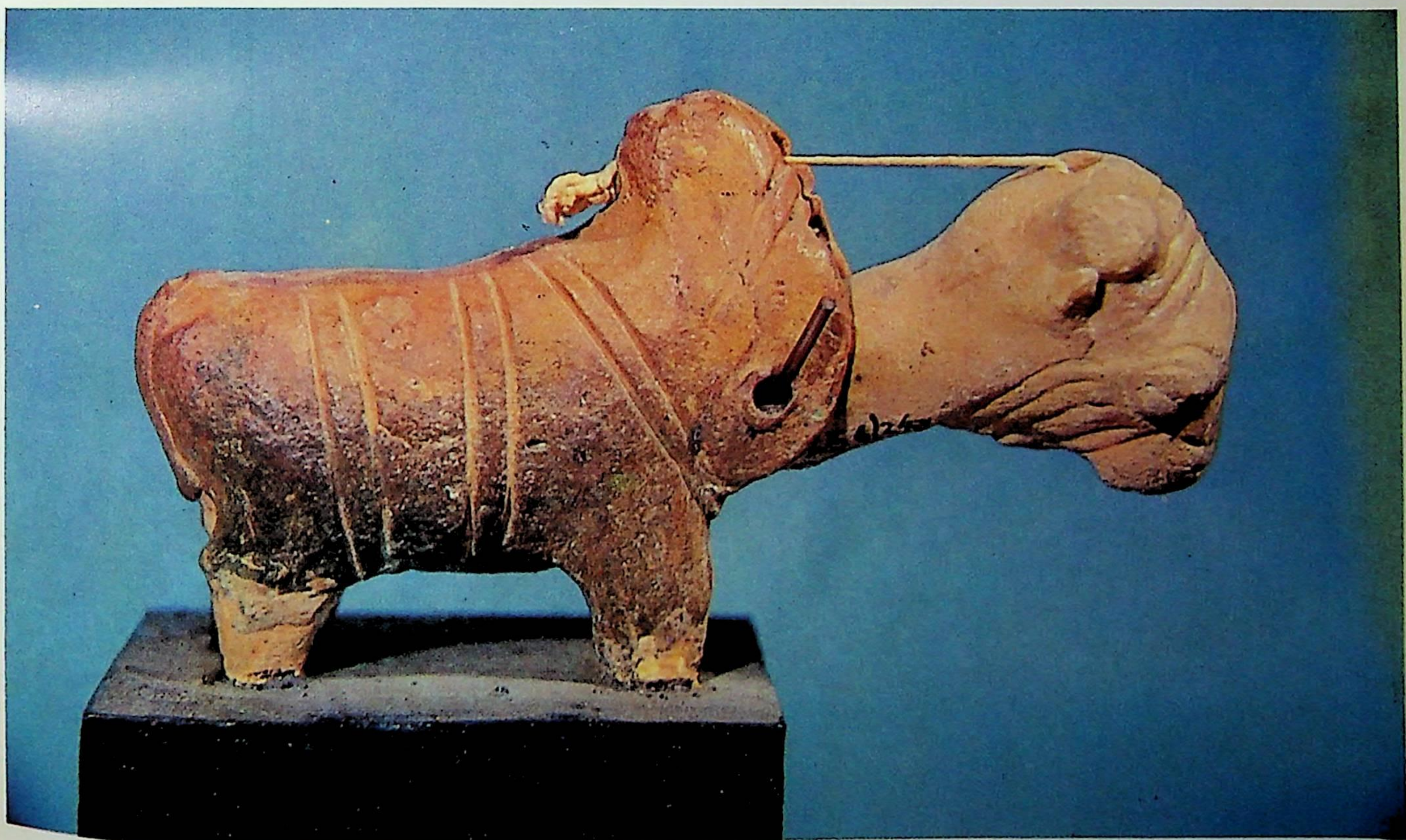
Of the six periods identified at Ropar, Period I revealed the existence of a Harappan settlement. Dr. Sharma writes: 'A steatite seal in Indus script, impressions of seals on a terracotta lump, chert blades, copper implements and vessels, terracotta "cakes", beads and bangles of faience and typical pottery —all testify to a flourishing Harappan township here. The earliest houses of the Harappans were built with river-pebbles, but soon they made use of cut-slabs of lime-conglomerate or brick, the latter agreeing in size with that found in the Indus Valley. Mud-brick walls were sometimes raised on foundations or plinth-base of stones. The dead were buried in pits in an extended position, with the head generally on the north along with funerary vessels, as in cemetery R-37 at Harappa.' It is not exactly known as to what led the Harappans to desert the site.

The authors of the Painted Grey Ware followed the Harappans in Period II. The full equipment of the former — consisting of typical pottery, including the black-slipped ware, beads and bangles of terracotta, semi-precious stones, glass and bone, bone arrow-heads, ivory kohl-sticks and copper implements —was unearthed here. Glass was unknown to the Harappans and it seems to have been introduced by the Painted Grey Ware people. Flimsy evidence of the houses of the latter in the shape of burnt lumps of clay with impressions of





Left Dancing girl, bronze, 3rd millennium, Mohen-jo-daro
Right Seal showing bull, steatite, 3rd millennium, Mohen-jo-daro
Below Toy animal, terracotta, 3rd millennium, Mohen-jo-daro







Left Seal with unicorn, steatite, 3rd millennium, Harappa

Right Seal with man and tigers, steatite, 3rd millennium, Mohen-jo-daro

Below Toy bird on wheels, terracotta, 3rd millennium, Mohen-jo-daro

Facing page Mother goddess, terracotta, 3rd millennium, Mohen-jo-daro









Above Srivatsa with Sakti symbolised, limestone plaque from Salankayana phase, 3rd-4th century A.D., Peddavegi, Distt. West Godavari (Andhra Pradesh)
Facing page Siva Parvati, cult of Soma, limestone plaque from Salankayana phase, 3rd-4th century A.D., Peddavegi, Distt. West Godavari (Andhra Pradesh)



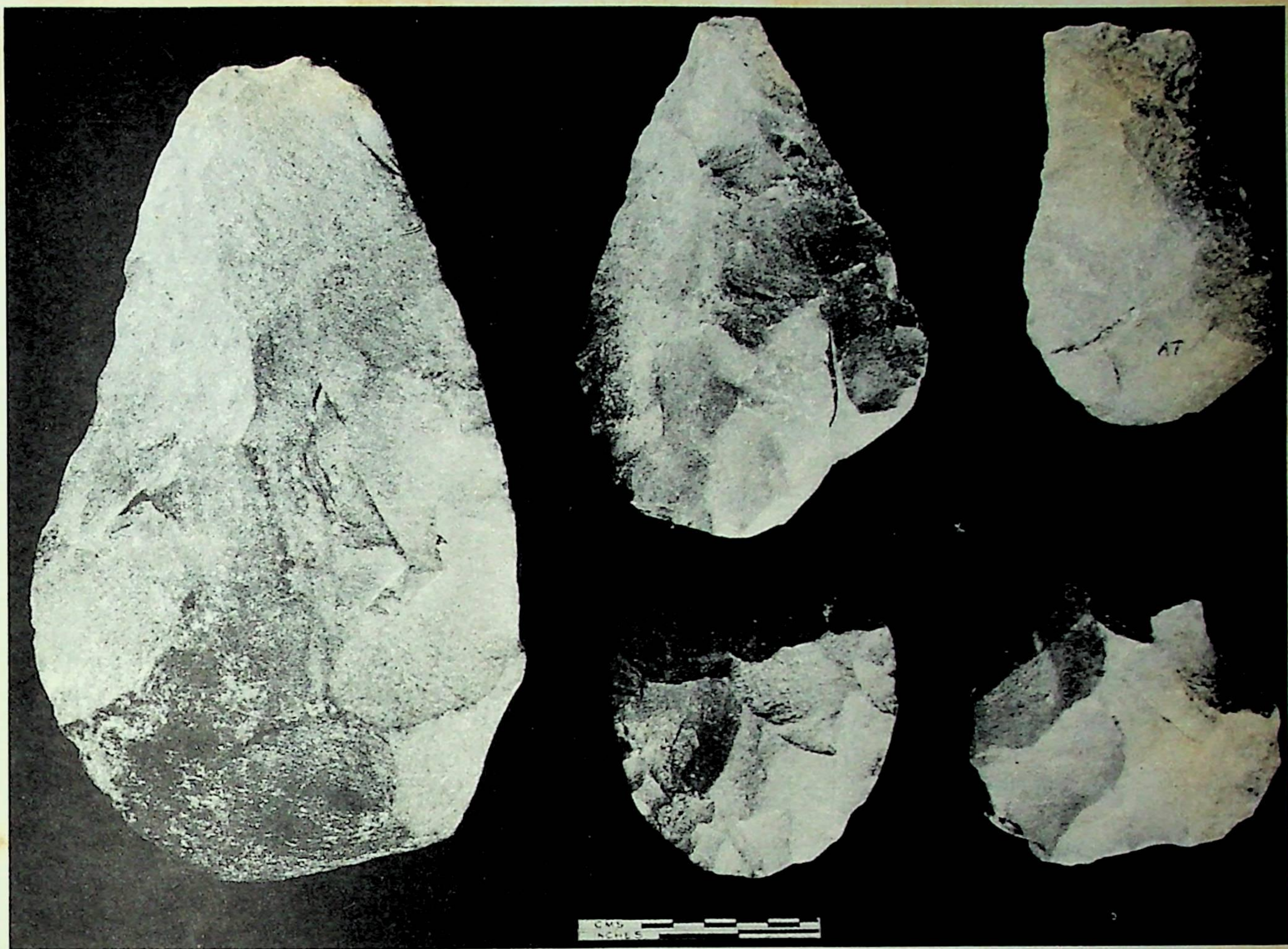
Above and Facing page Wall painting before and after chemical preservation from South Wall, Doma Lang, Tabo, Distt. Lahaul Spiti, (Himachal Pradesh)



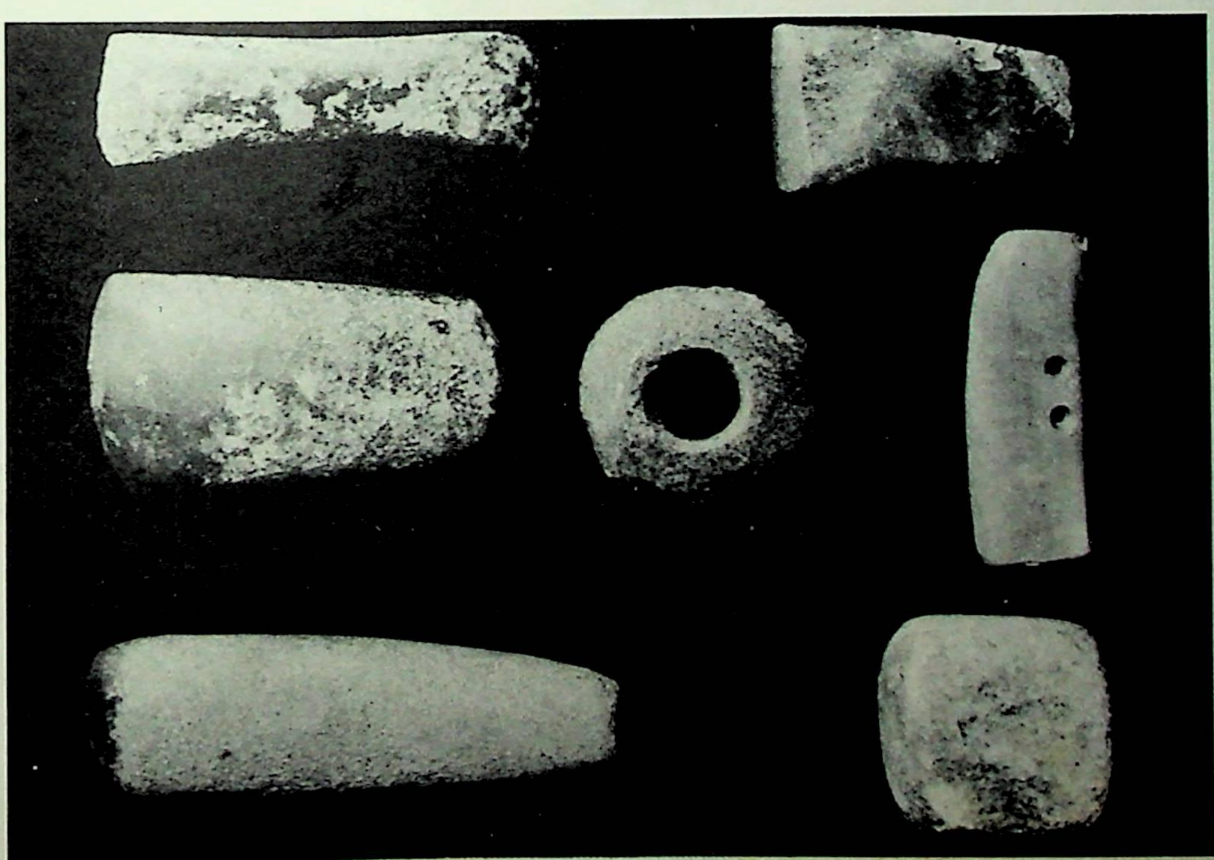


Above and Right Wall painting before and after chemical preservation from South Wall, Doma Lang, Tabo, Distt. Lahaul Spiti, (Himachal Pradesh)

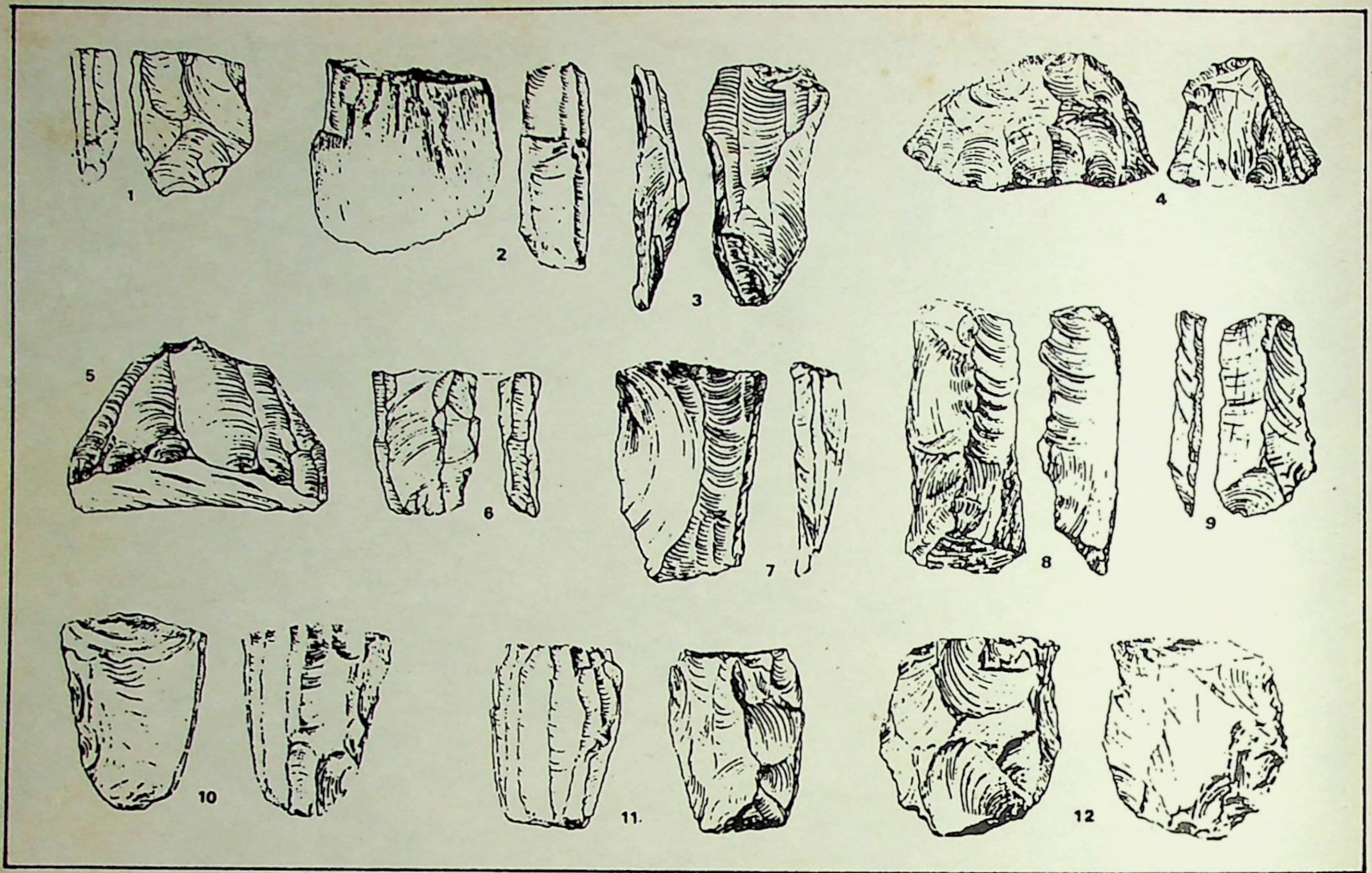


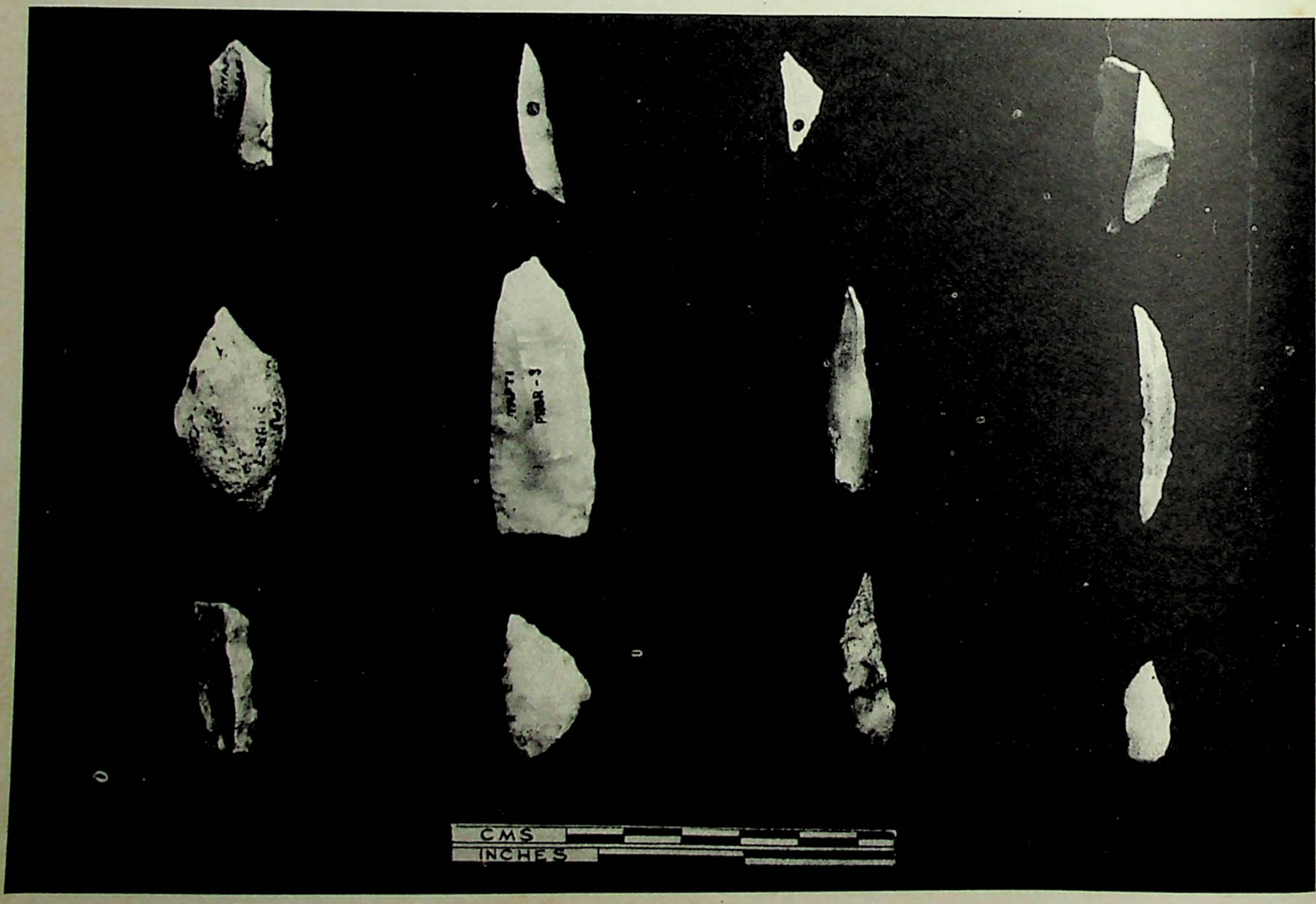


1. Acheulian Handaxe Industries



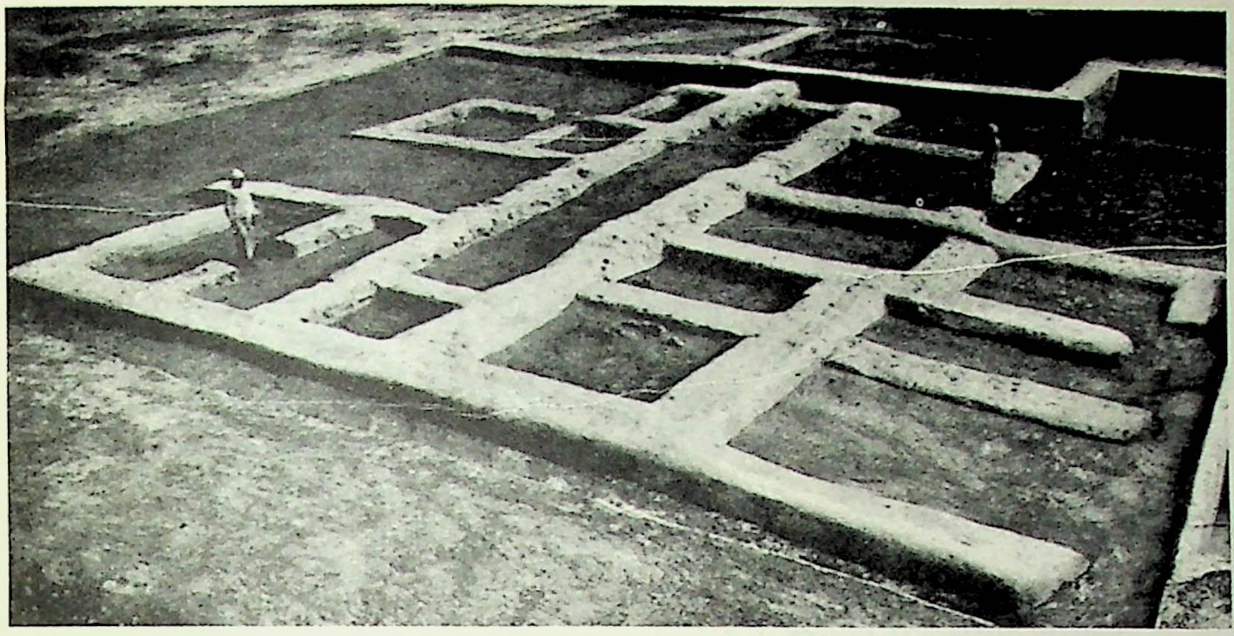
2. Neolithic Implements from Burzahom


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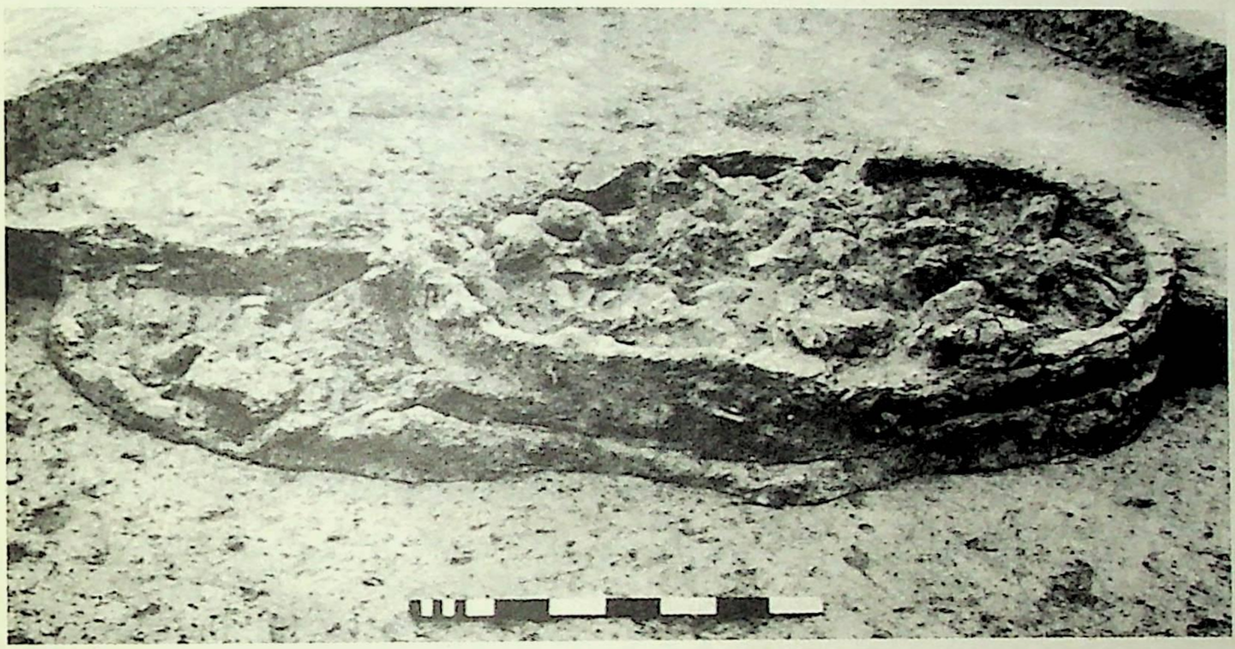

CMS
INCHES

3. *Facing page Above* Upper Palaeolithic tools: 1, 2, 6, 7 burins; 3, 8, 9 blades; 4, 5 scrapers; 10-12 cores

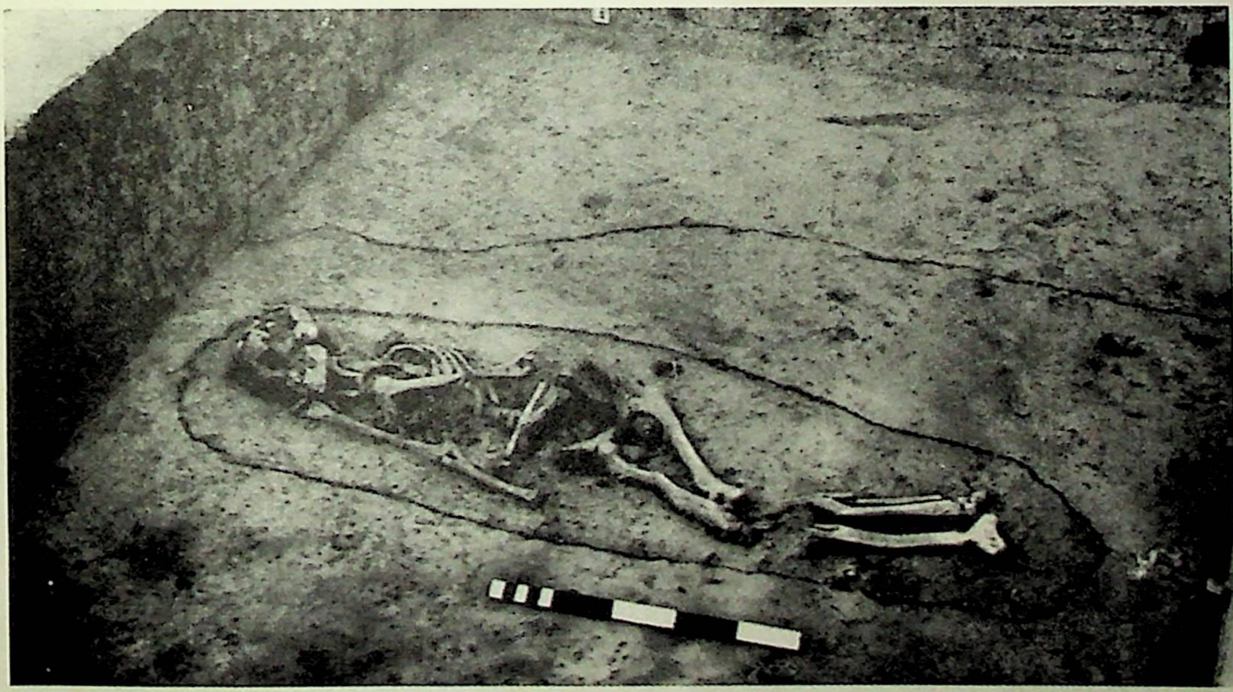
4. *Below* Microliths



5. Bhagwanpura: A mud-walled house complex from Painted Grey Ware levels

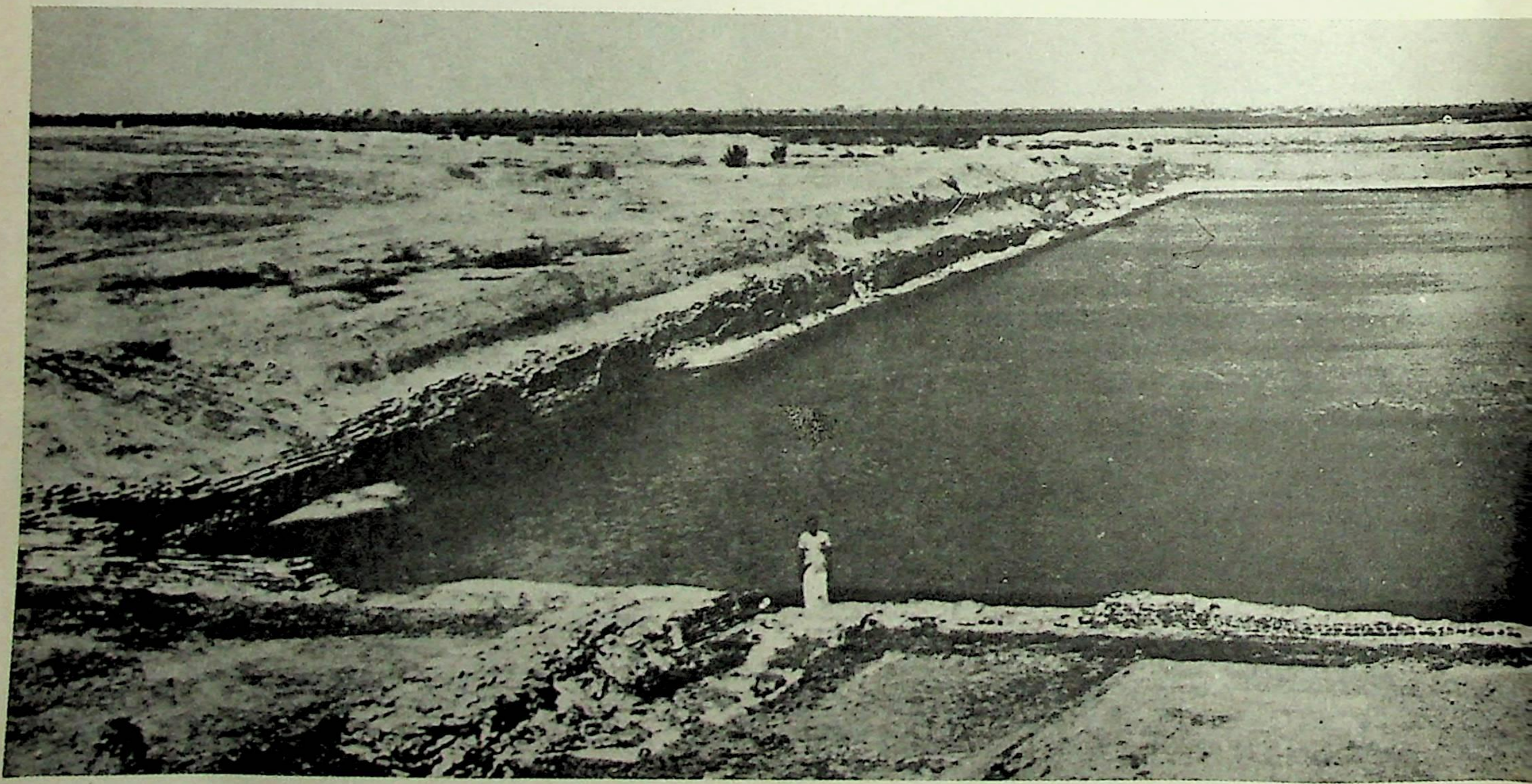


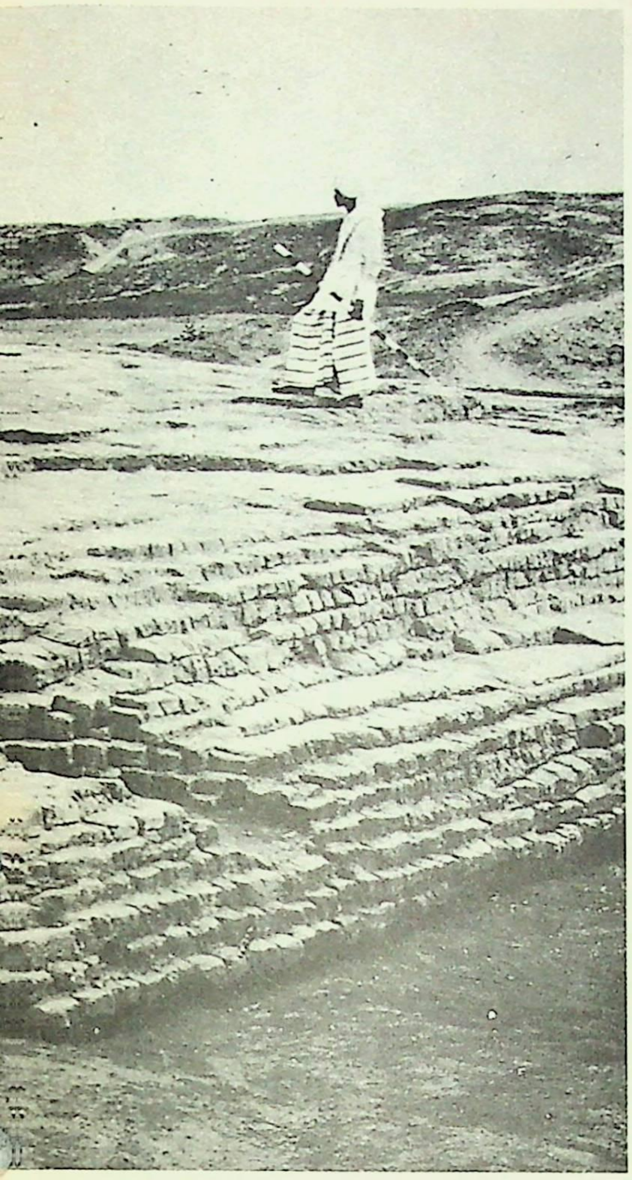
6. Bhagwanpura: Oval burnt structure from Painted Grey Ware levels

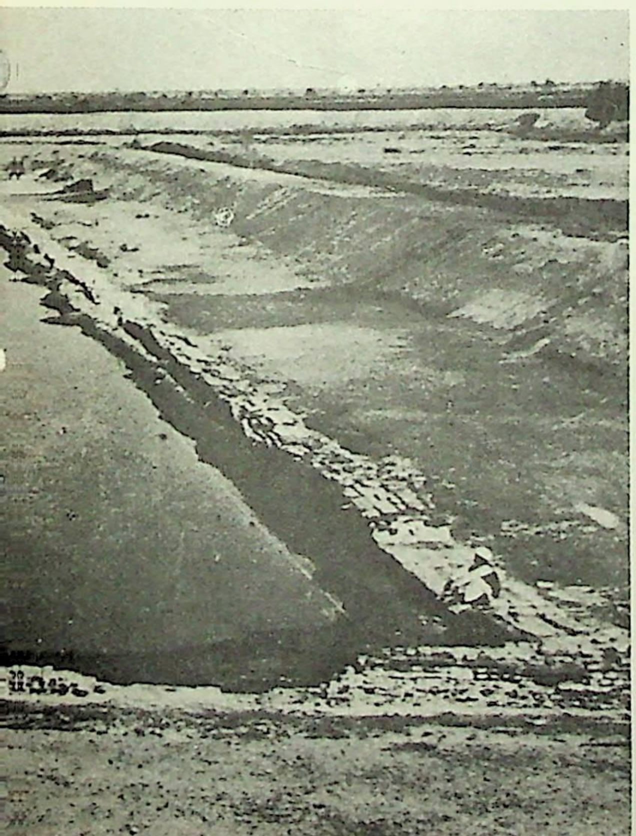


7. Bhagwanpura: A skeleton in a grave from Painted Grey Ware levels

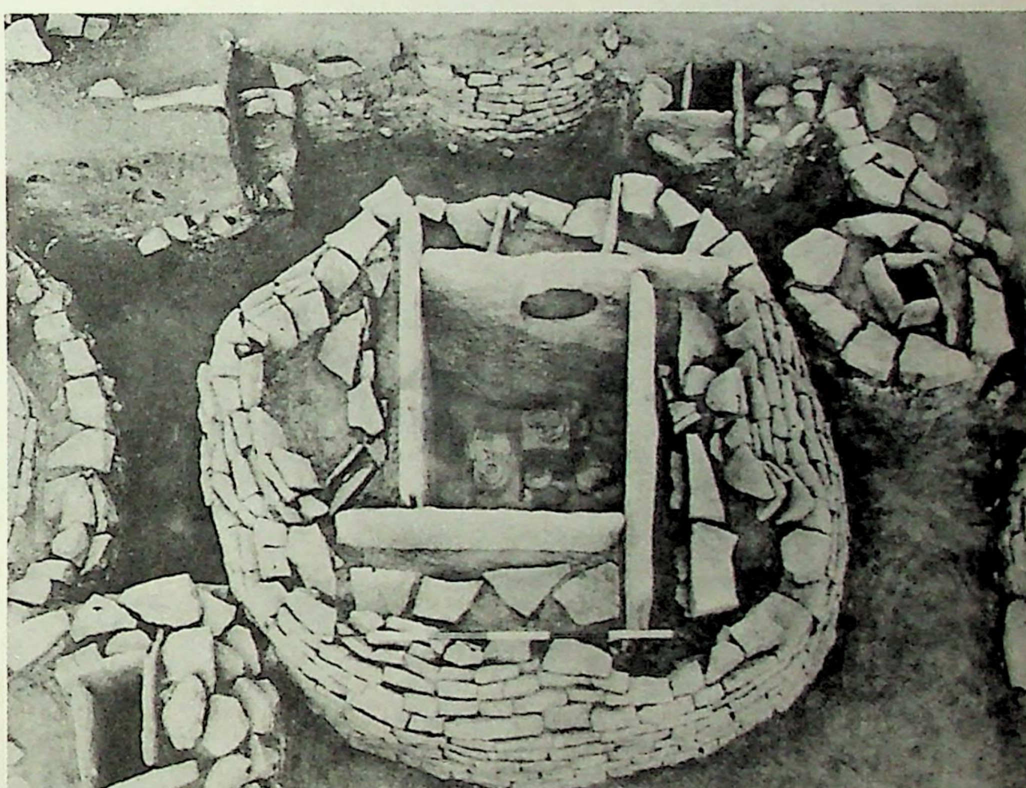










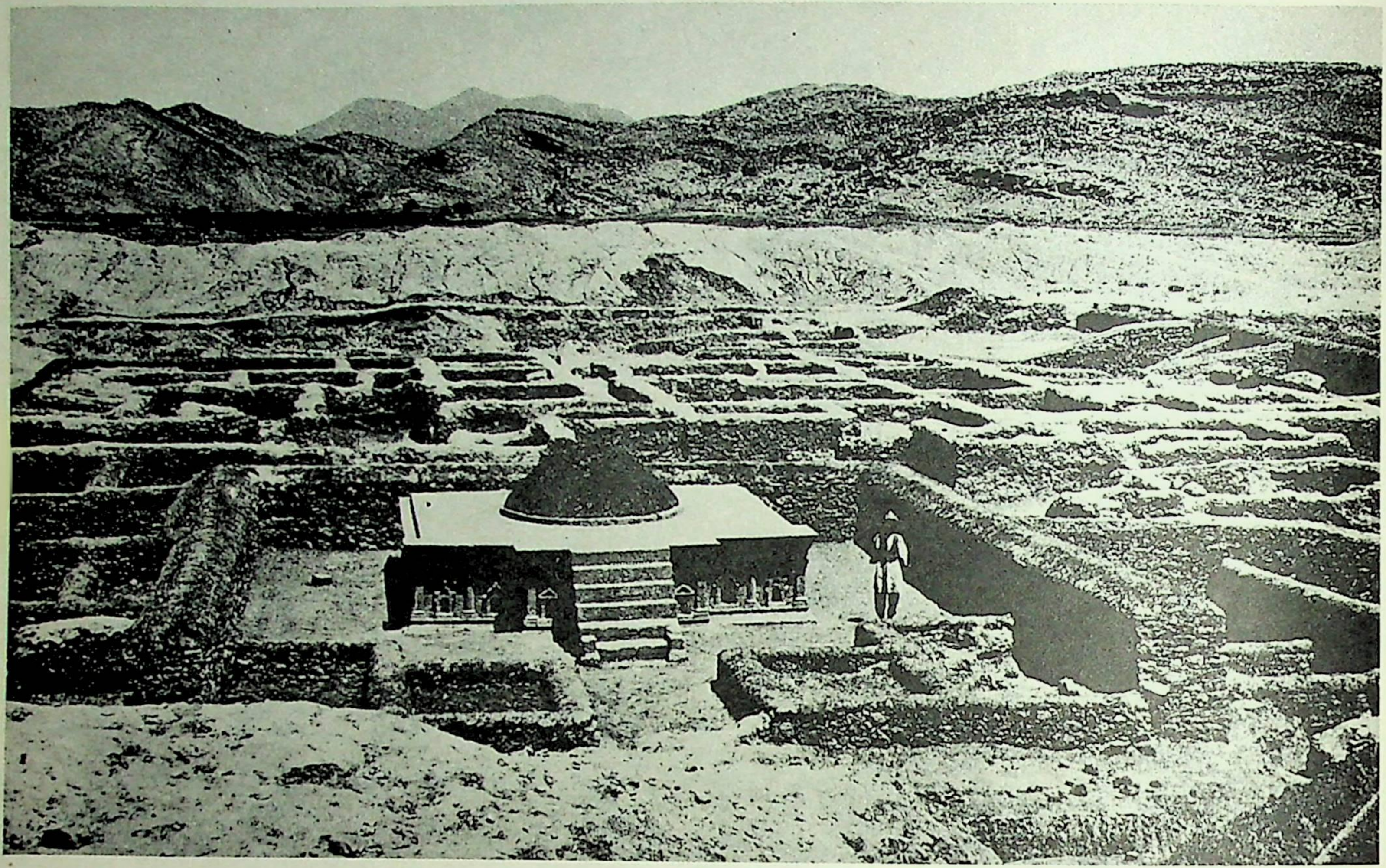


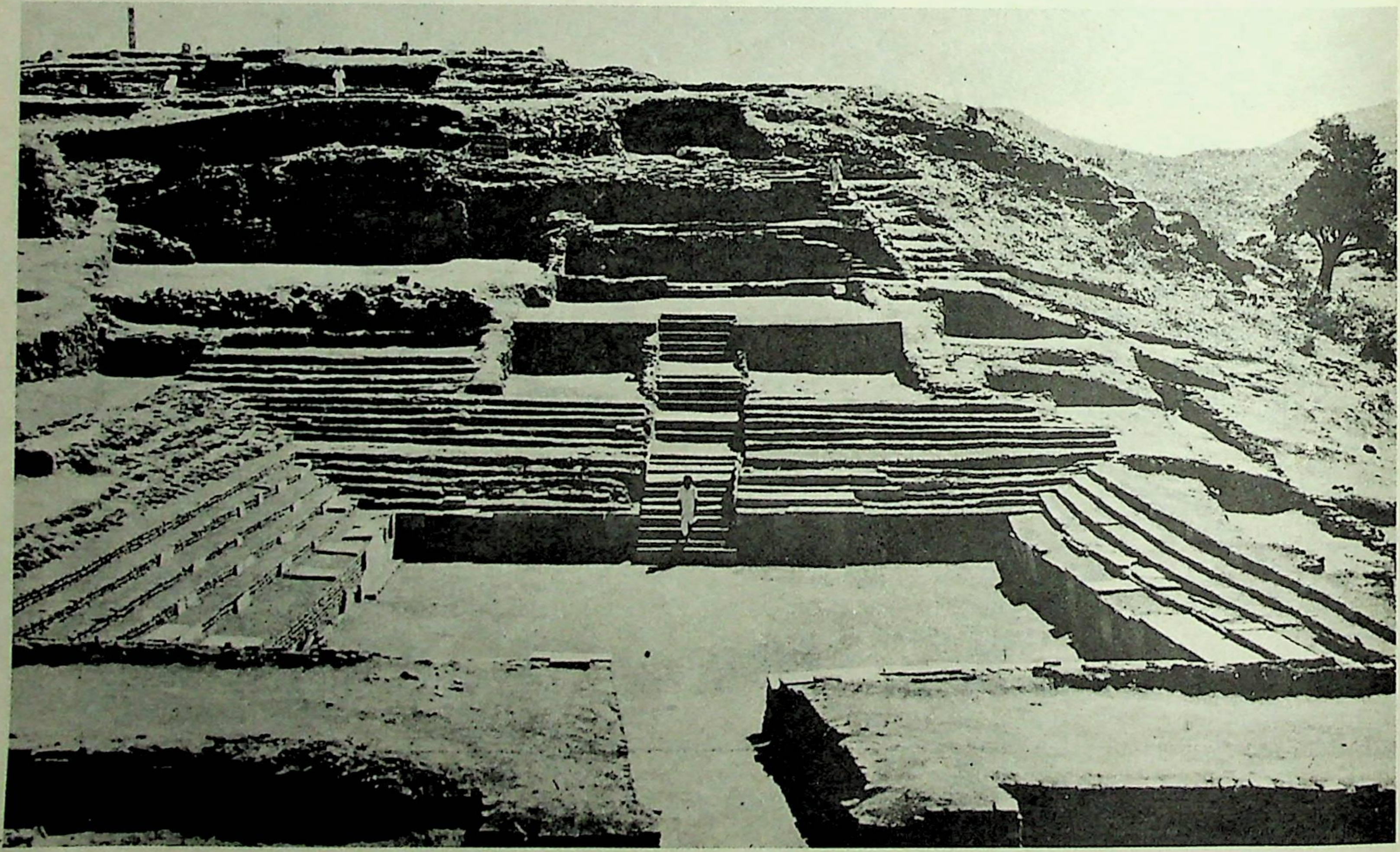
10. *Above* Navdatoli: Pottery

11. *Below* Brahmagiri: Megalith (Cist type)

8. *Left above* Kalibangan: General view showing rampart with mud-brick platform

9. *Below* Lothal: Dockyard





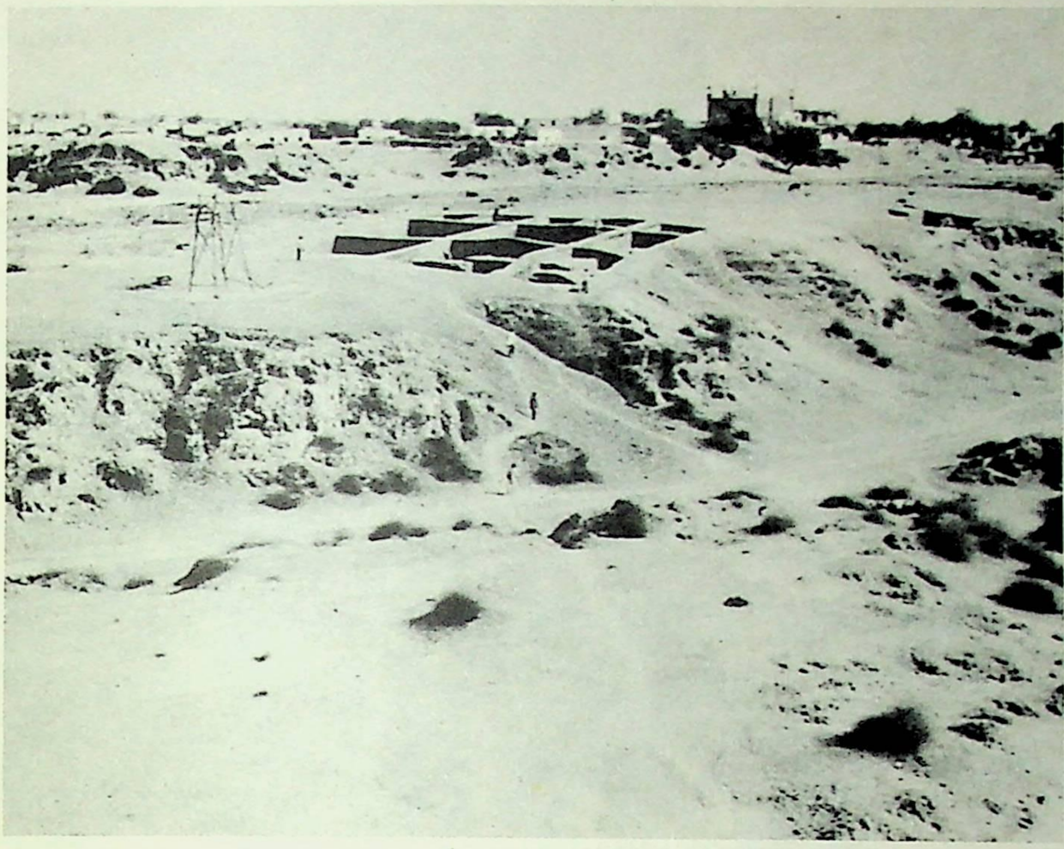
12. *Facing page Above* Taxila (Sirkap): View of three-headed eagle *stupa*

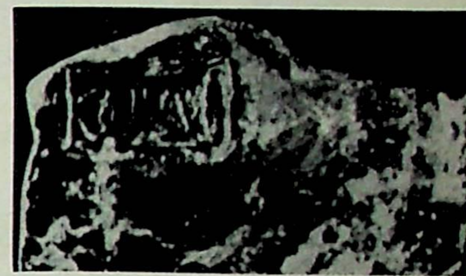
13. *Below* Nagarjunakonda: Amphitheatre

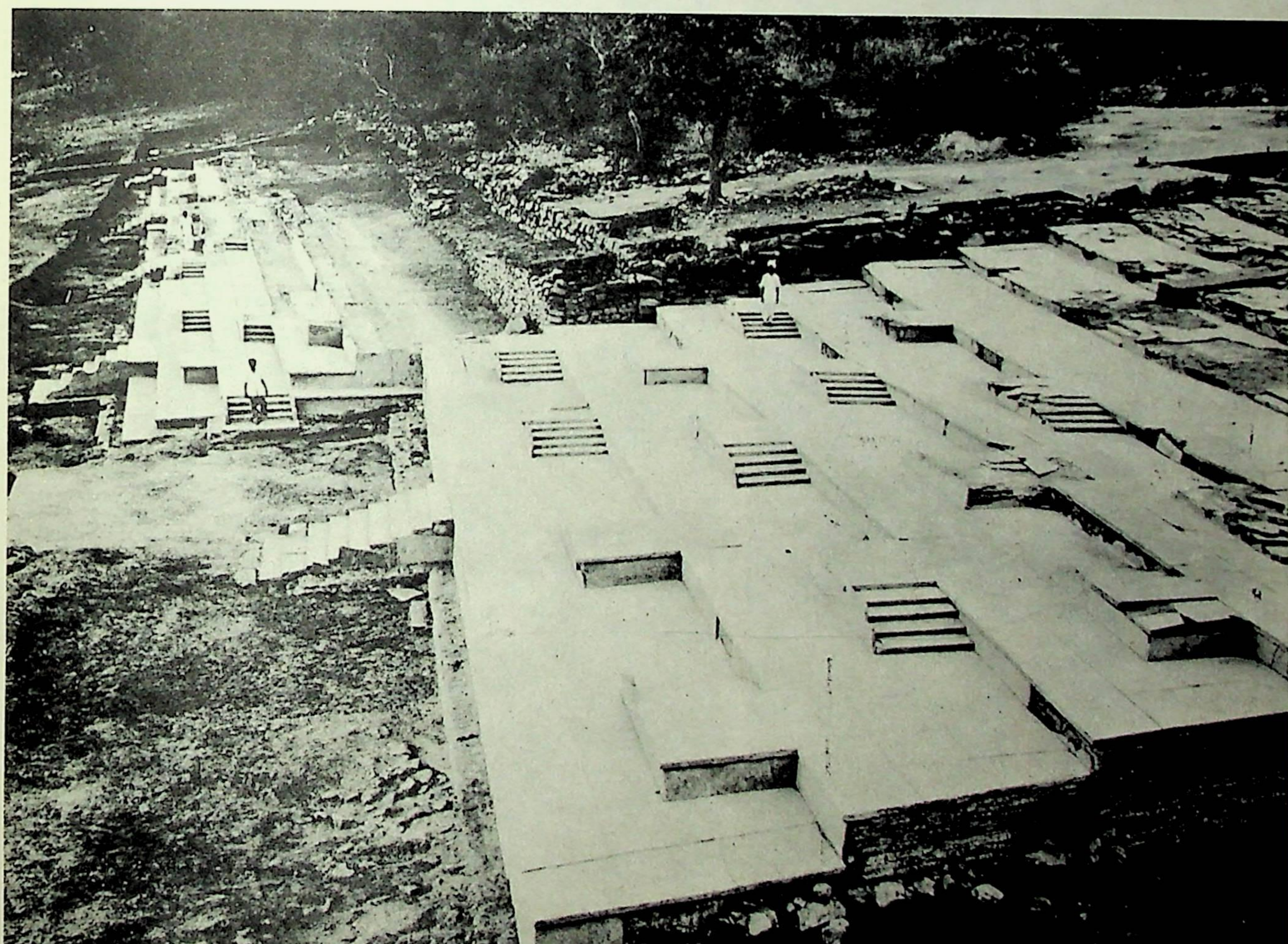
14. *Left above* Mathura: General view of an archaeological site with inner fortification in the background

15. *Left below* Nagarjunakonda: Bathing ghat

16. Arikamedu: Roman pottery

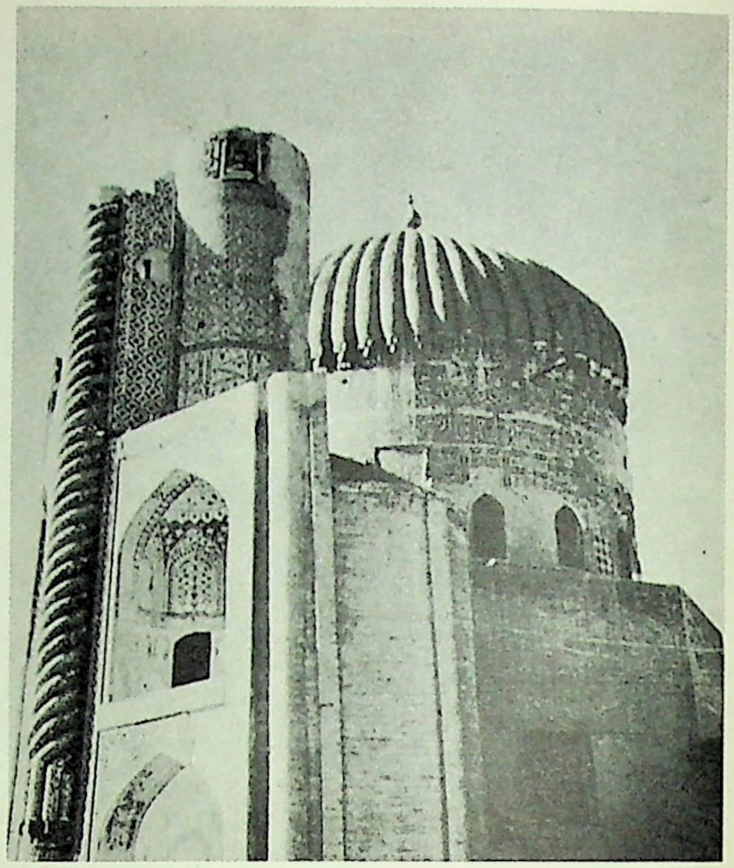


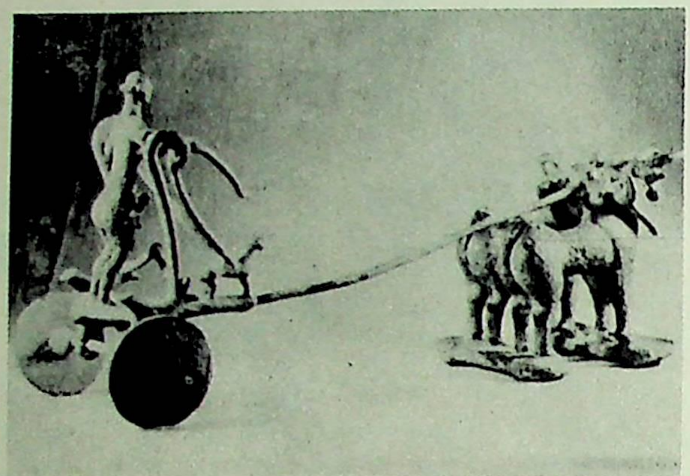




17. *Below* Daimabad: Bronze chariot rider

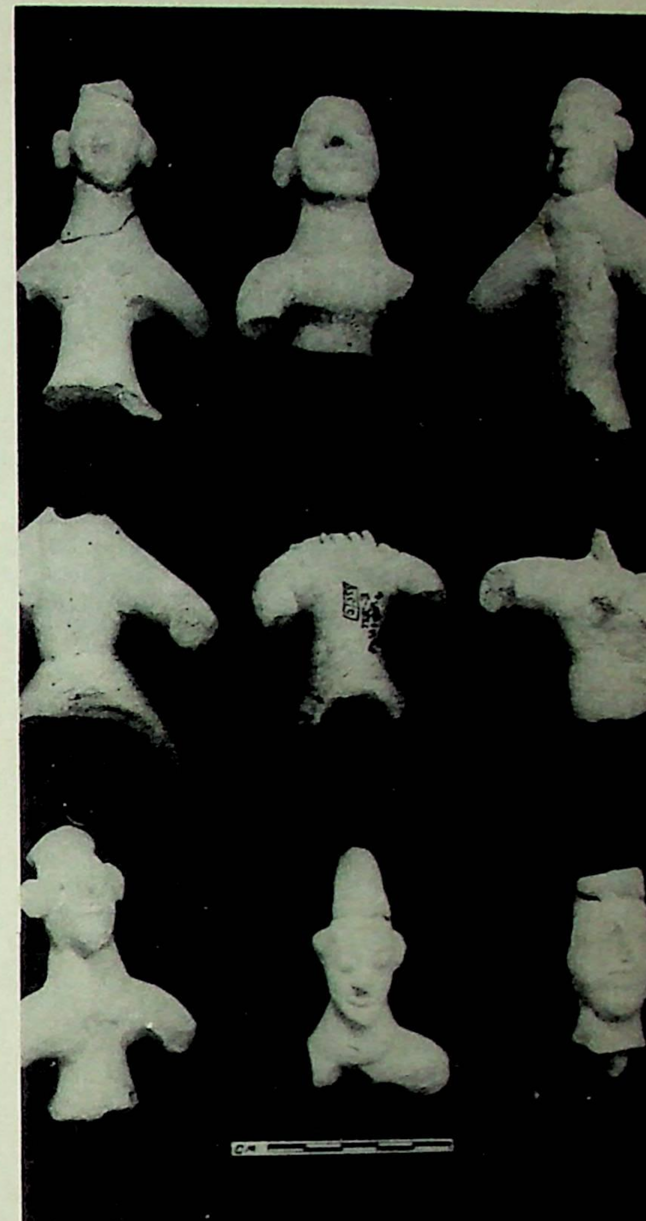
18. *Right* Balkh: Khwaja Parsa Mosque







19, 20, 21 { Sanghol Yakshis: 1 with mirror, pointing nail mark crescent on her right cheek; 2 with wine cup; 3 Salabhanjika





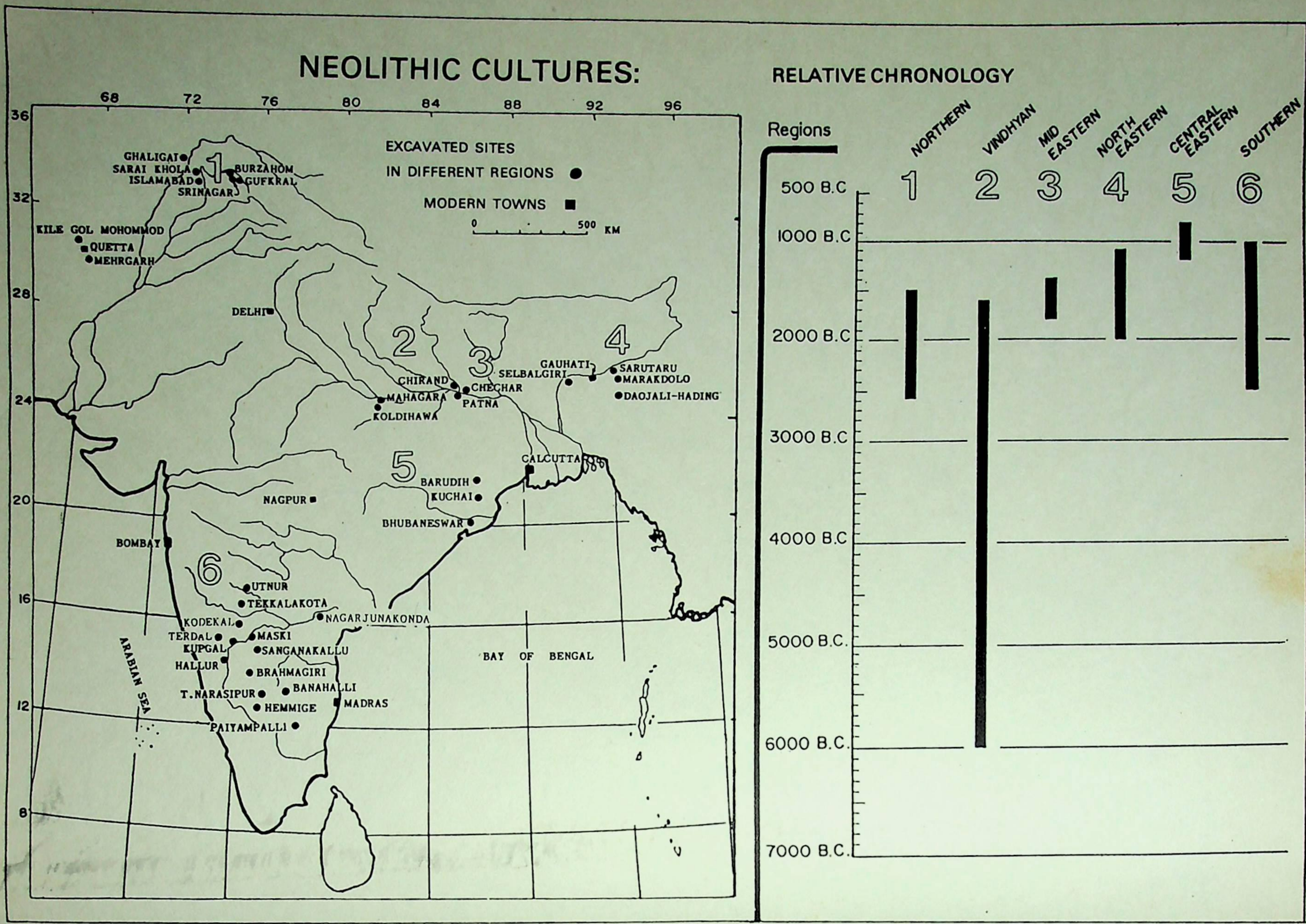


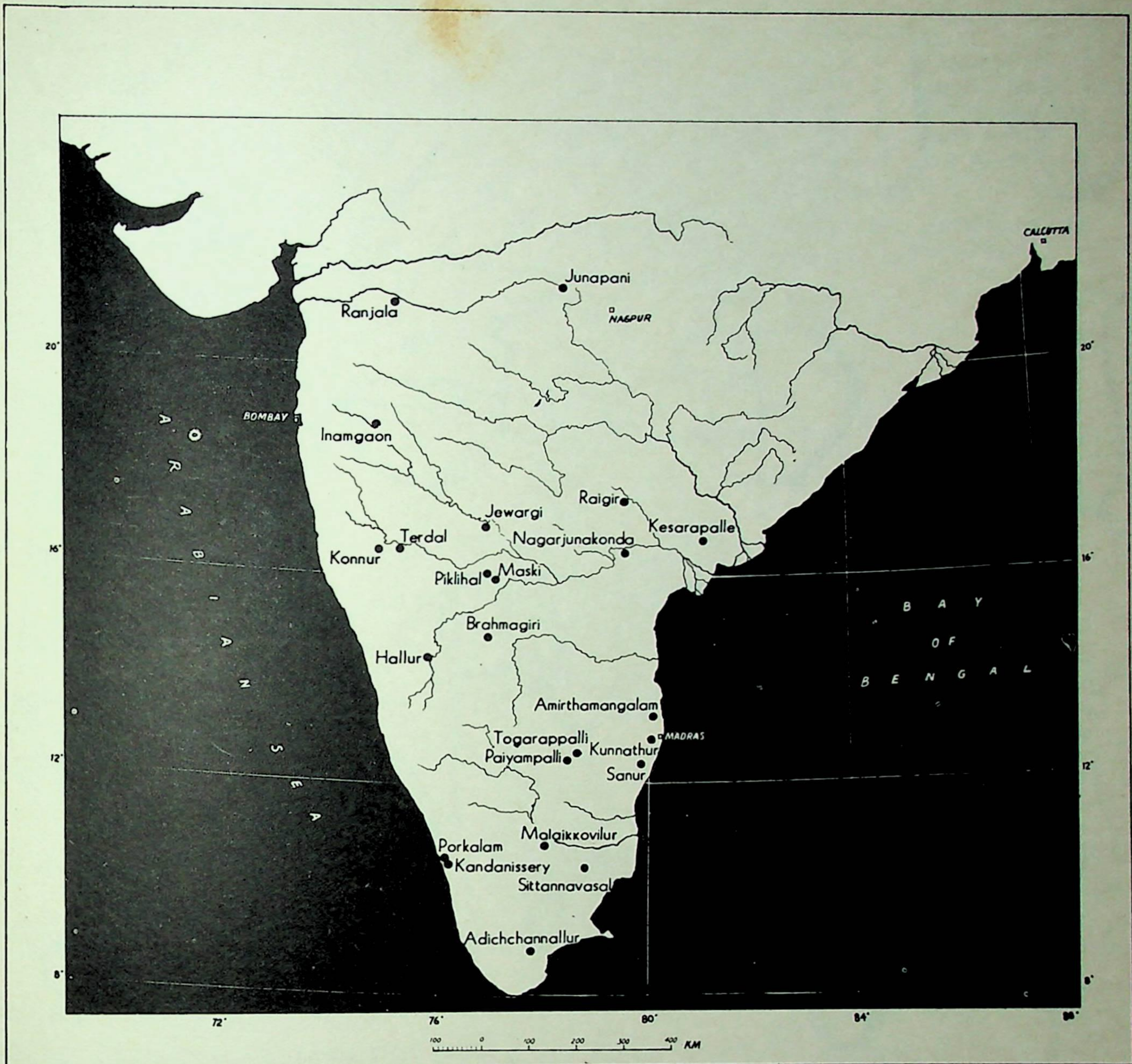
22 23 24 { Ahichchhatra: Human figures, animal head and a structure



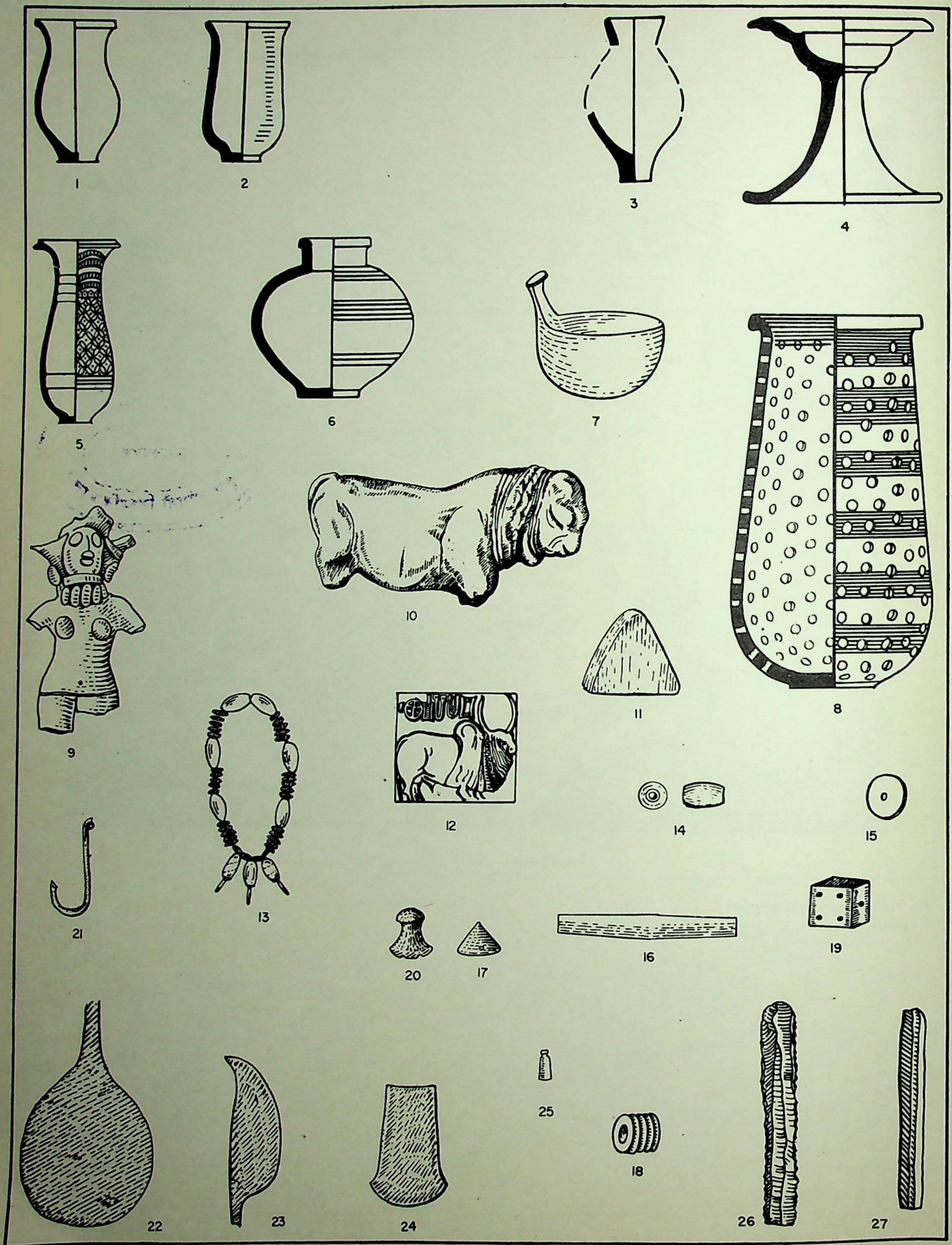


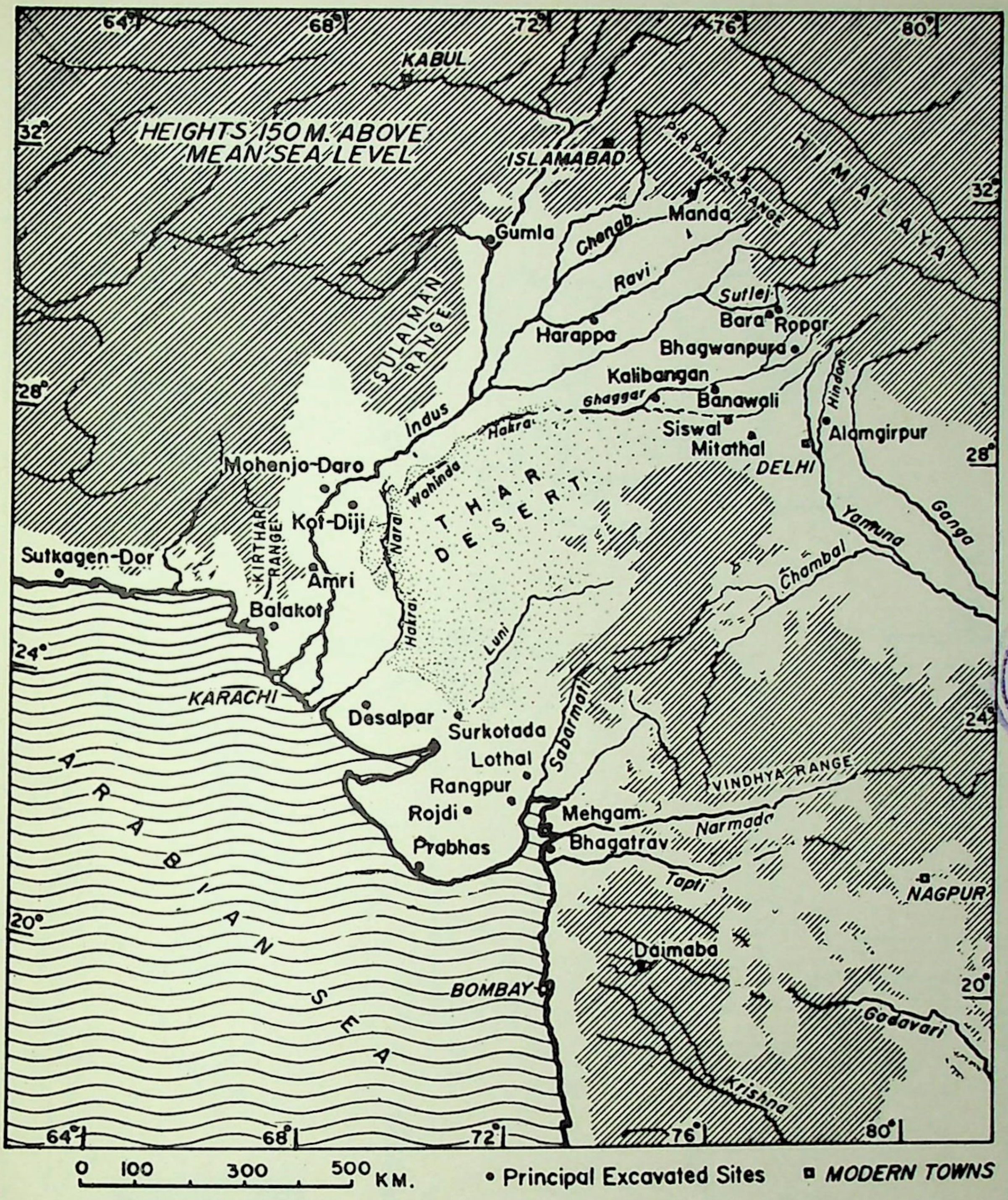
25. *Facing page*
Talagaon, Distt. Bilaspur (Madhya Pradesh): A nine feet tall image of Pasupatinath (?) of unparalleled iconographic features and weighing five tonnes discovered for the first time and dated by the excavator to the 5th-6th century A.D.


NEOLITHIC CULTURES:
EXCAVATED SITES
IN DIFFERENT REGIONS
MODERN TOWNS
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500 KM
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GHALIGAI
SARAI KHOLA
ISLAMABAD
SRINAGAR
BURZAHOM
GUFKRAL
KILE GOL MOHOMMOD
QUETTA
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MAHAGARA
KOLDIHAWA
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SELBALGIRI
GAUHATI
SARUTARU
MARAKDOLO
DAOJALI-HADING
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NAGPUR
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NAGARJUNAKONDA
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TERDAL
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T.NARASIPUR
BANAHALLI
HEMMIGE
MADRAS
PAIYAMPALLI
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BAY OF BENGAL
RELATIVE CHRONOLOGY
Regions
1 NORTHERN
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3 MID EASTERN
4 NORTH EASTERN
5 CENTRAL EASTERN
6 SOUTHERN
500 B.C
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7000 B.C.



28. South India: Megalithic Sites

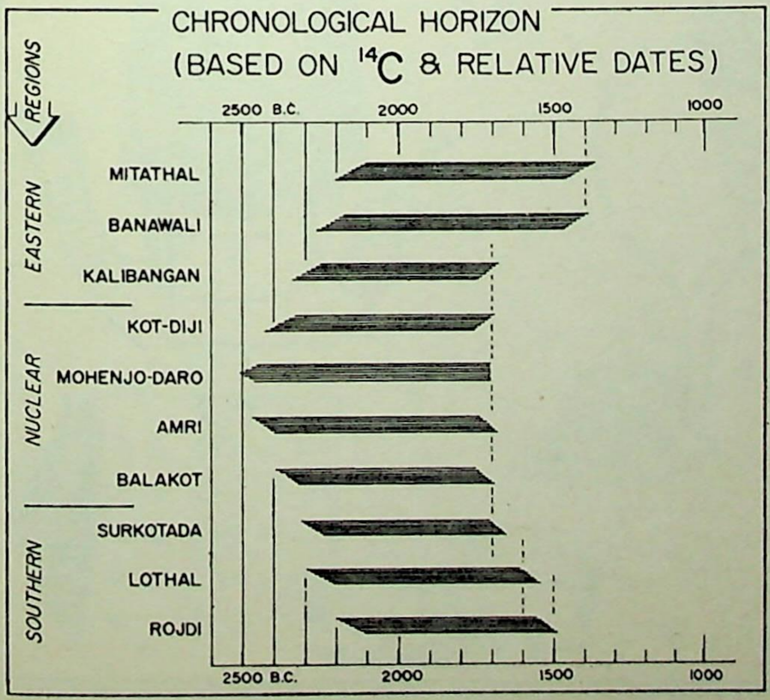

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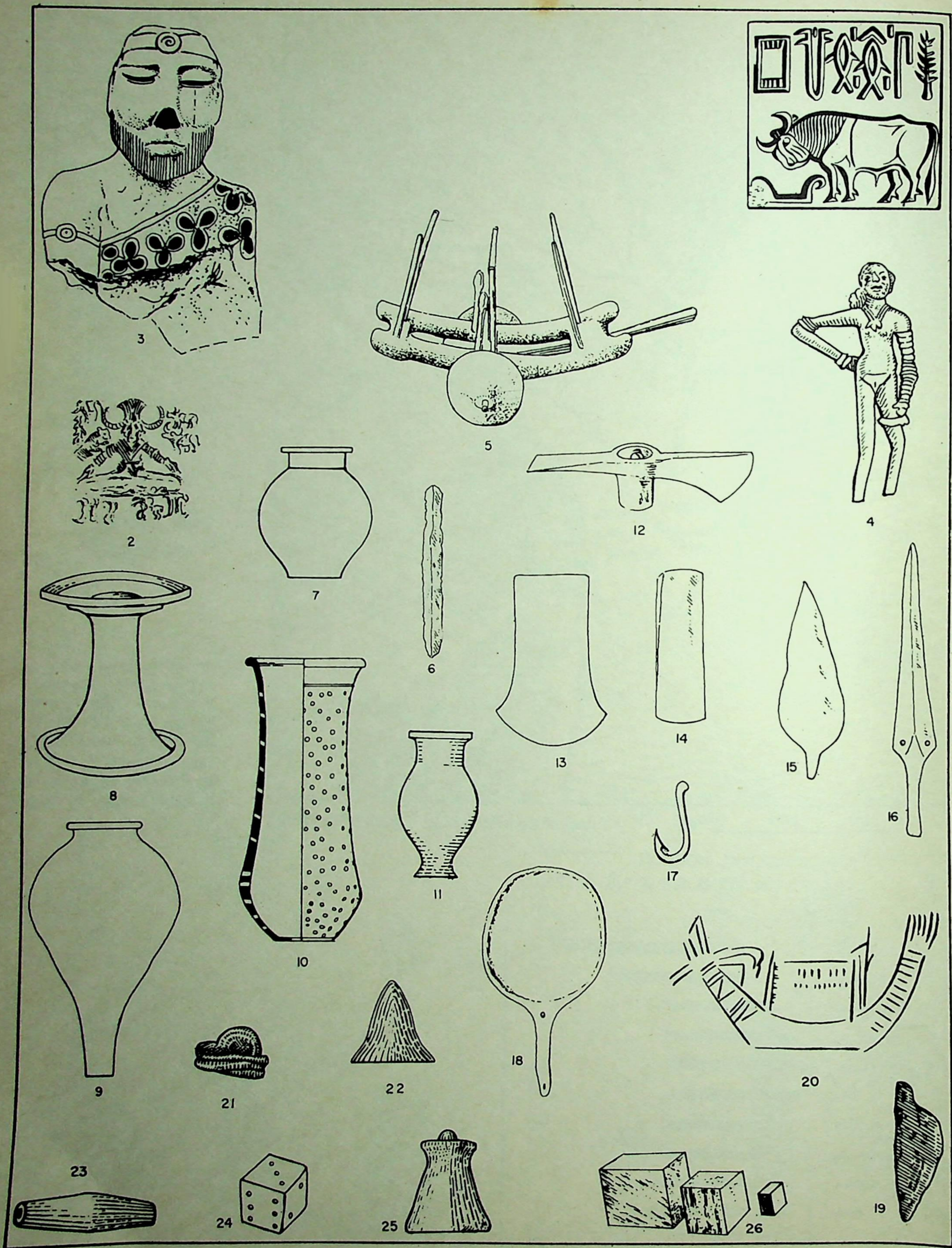
29. *Facing page* Harappa: 1-8 Pottery types; 9, 10 Terracotta figurines; 11 Terracotta 'cake'; 12 Steatite seal; 13-18 Beads; 19 Dice; 20 Gamesmen; 21-24 Copper tools; 25 Weight; 26, 27 Blades

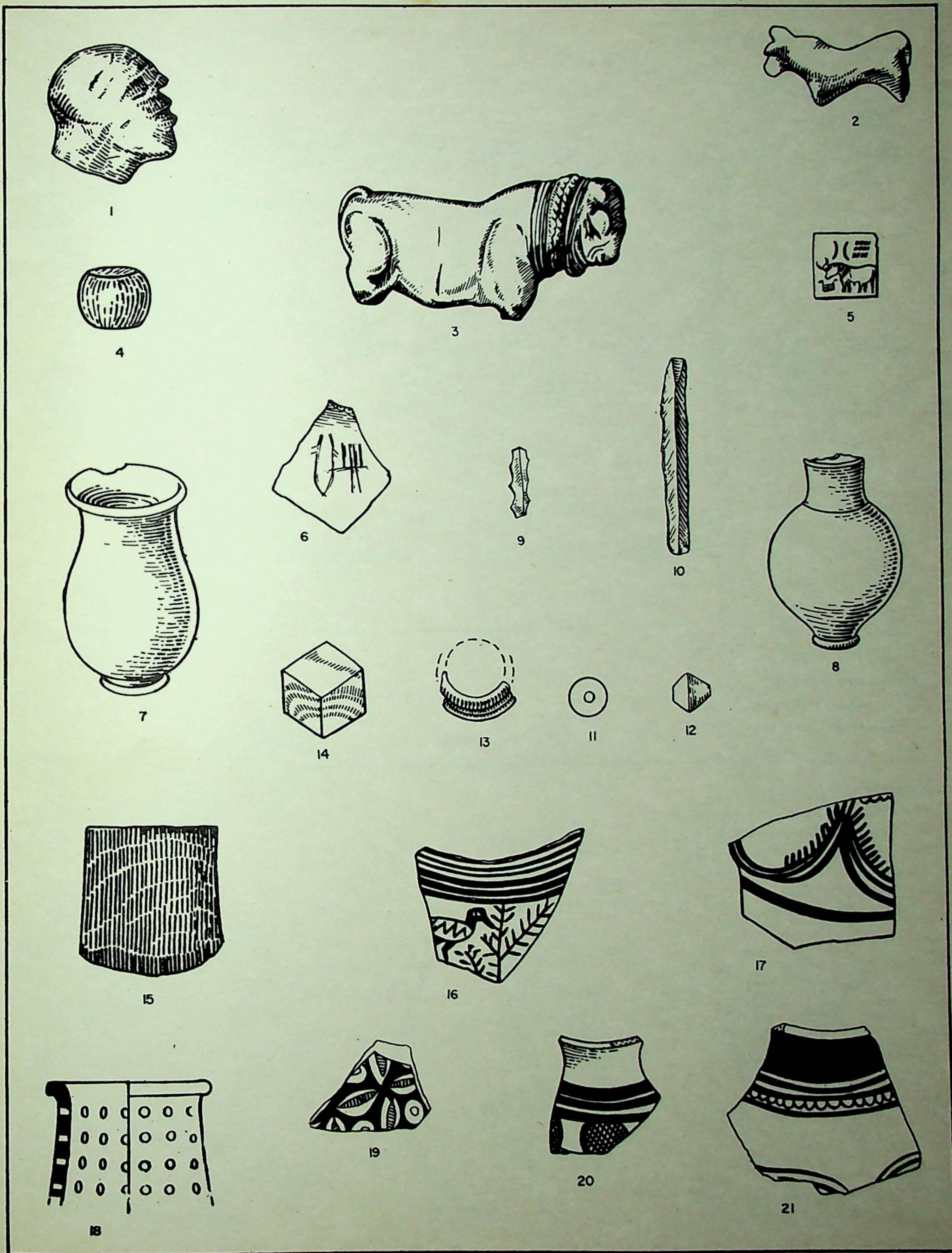
30. Distribution of Indus Civilization

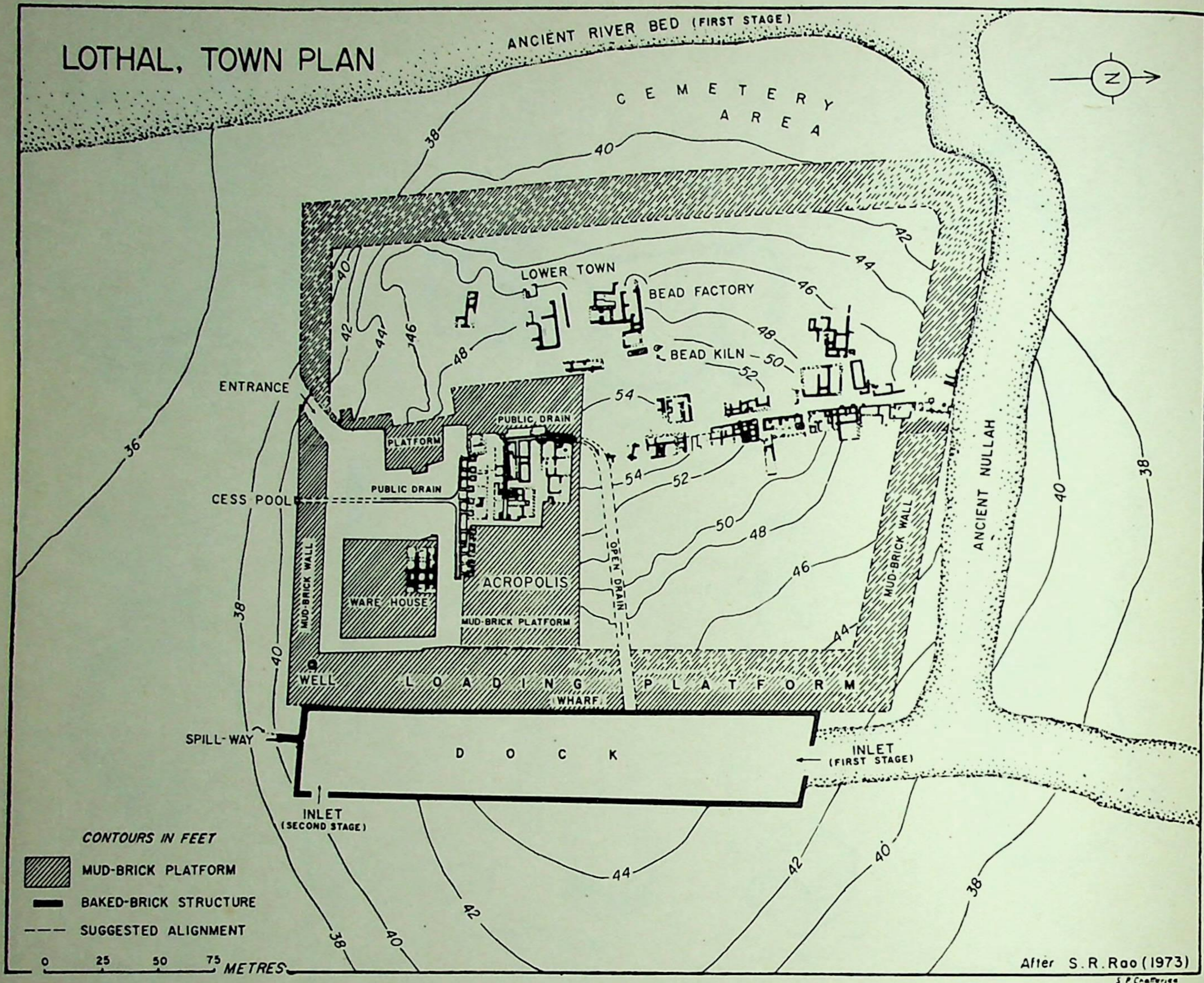
32. *Overleaf* Mohen-jo-daro: 1, 2 seals; 3, 4 Terracotta figurines; 5 Terracotta cart; 6 Chert blade; 7-11 Pottery types; 12-17 Bronzes; 18, 19 Copper objects; 20 Terracotta boat; 21 Ring; 22, 25 Gamesmen; 23 Bead; 24 Dice; 26 Weights



31. Chronological horizon of Indus Civilization

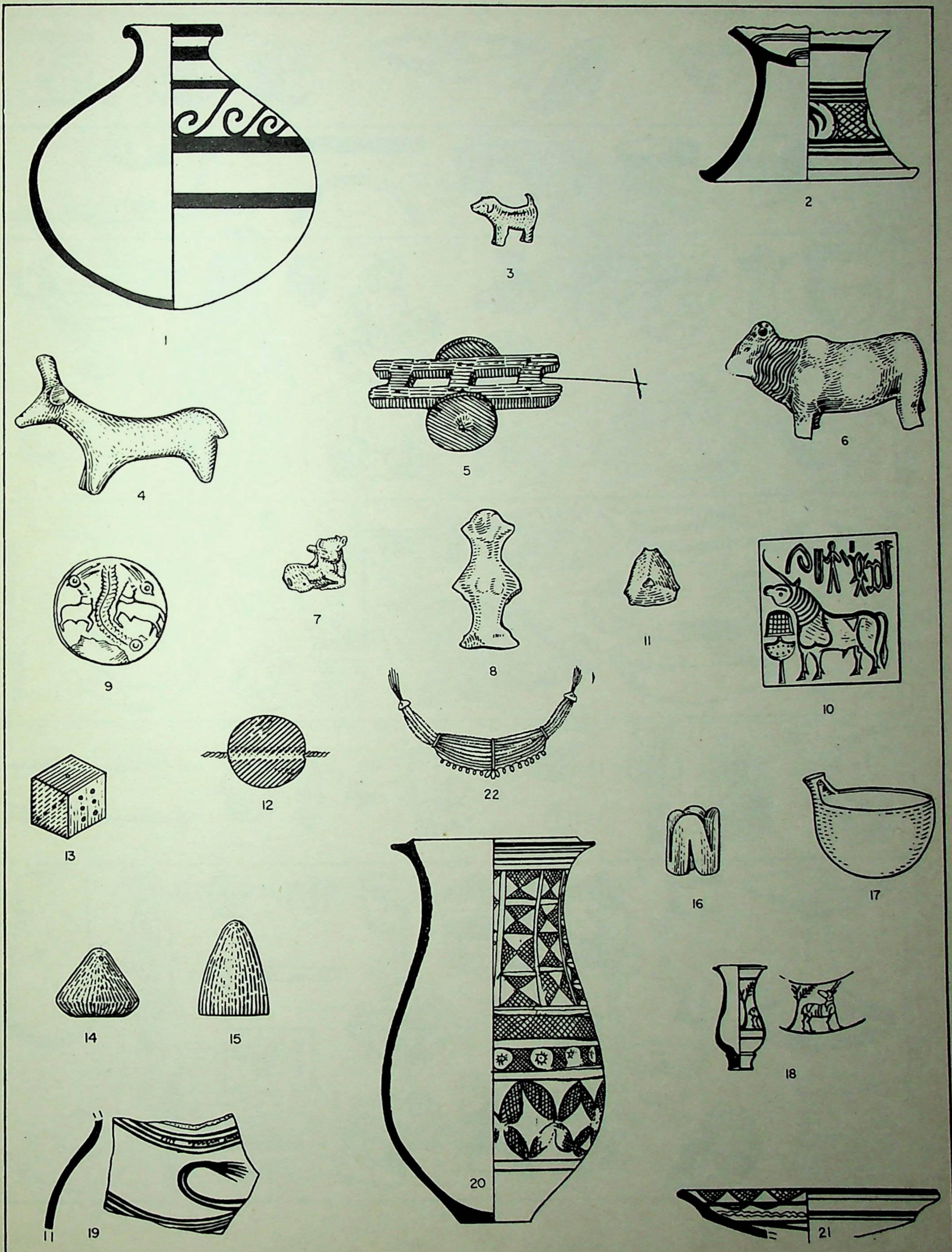

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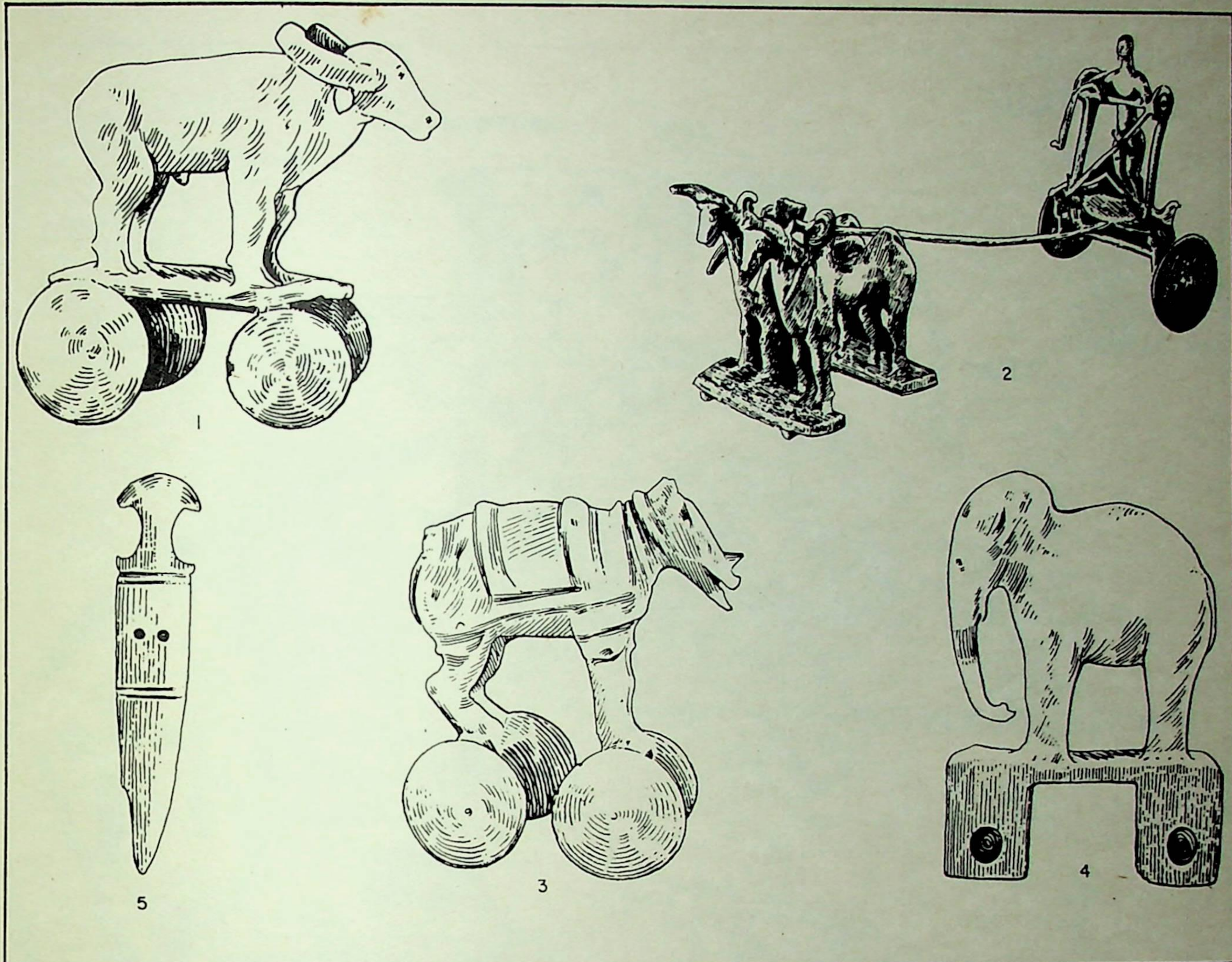
33. *Preceding page* Kalibangan:
1-3 Terracotta figurines;
4 Dice; 11, 12 Beads; 5 seal;
6-8 Pottery types; 9, 10
Blades; 13 Shell bangle;
14 Weight; 15 Celt;
16-21 Designed pottery

35. *Facing page* Lothal: 1, 2,
17-21 Pottery types; 3, 4,
6-8 Terracotta figurines;
5 Terracotta cart;
9, 10 Steatite seal;
11, 12 Terracotta beads;
13 Dice; 14, 15 Net sinkers;
16 Surveying instrument;
22 Multi-stranded necklace

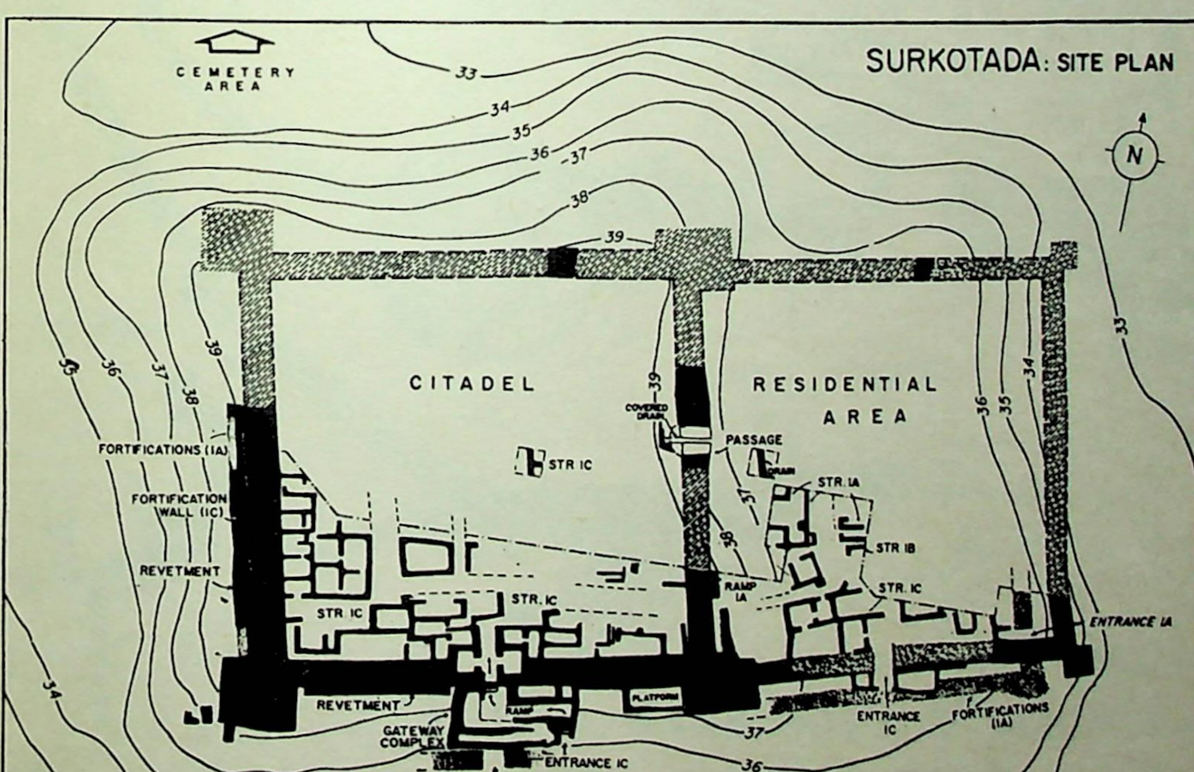

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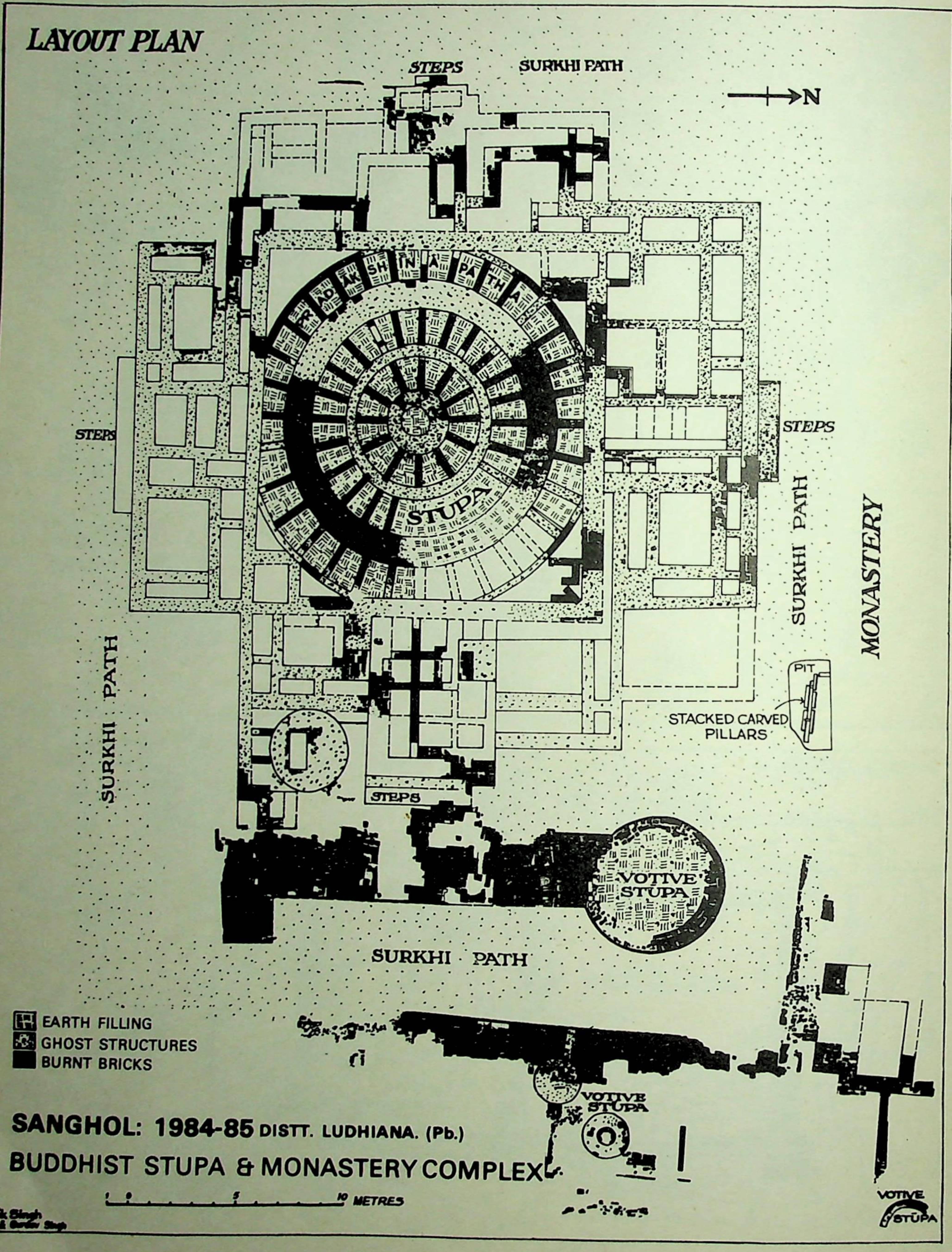


36. Ropar: Sequence of Cultural Periods



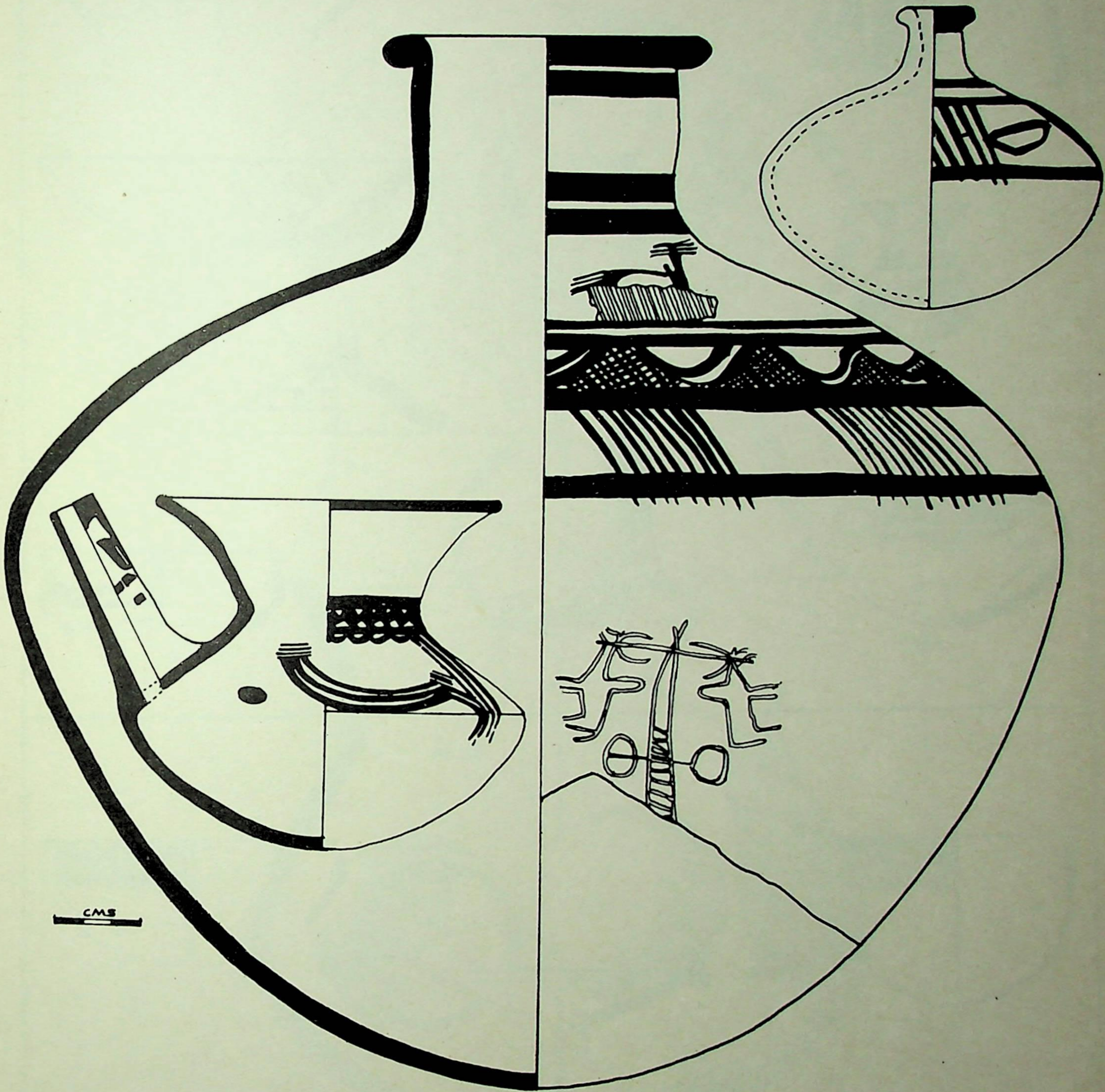
37. Daimabad: 1-4 Bronzes; 5 Ivory object



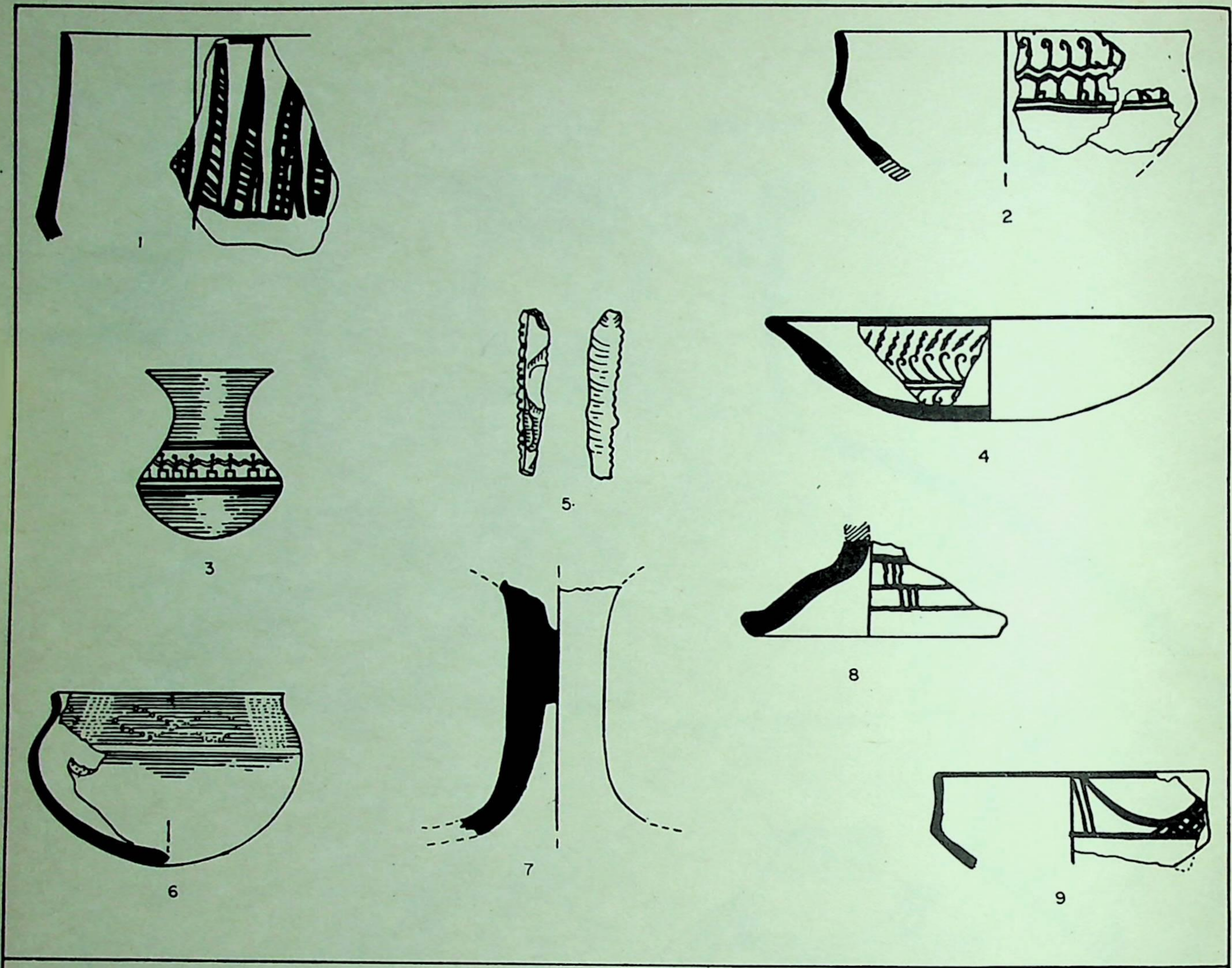


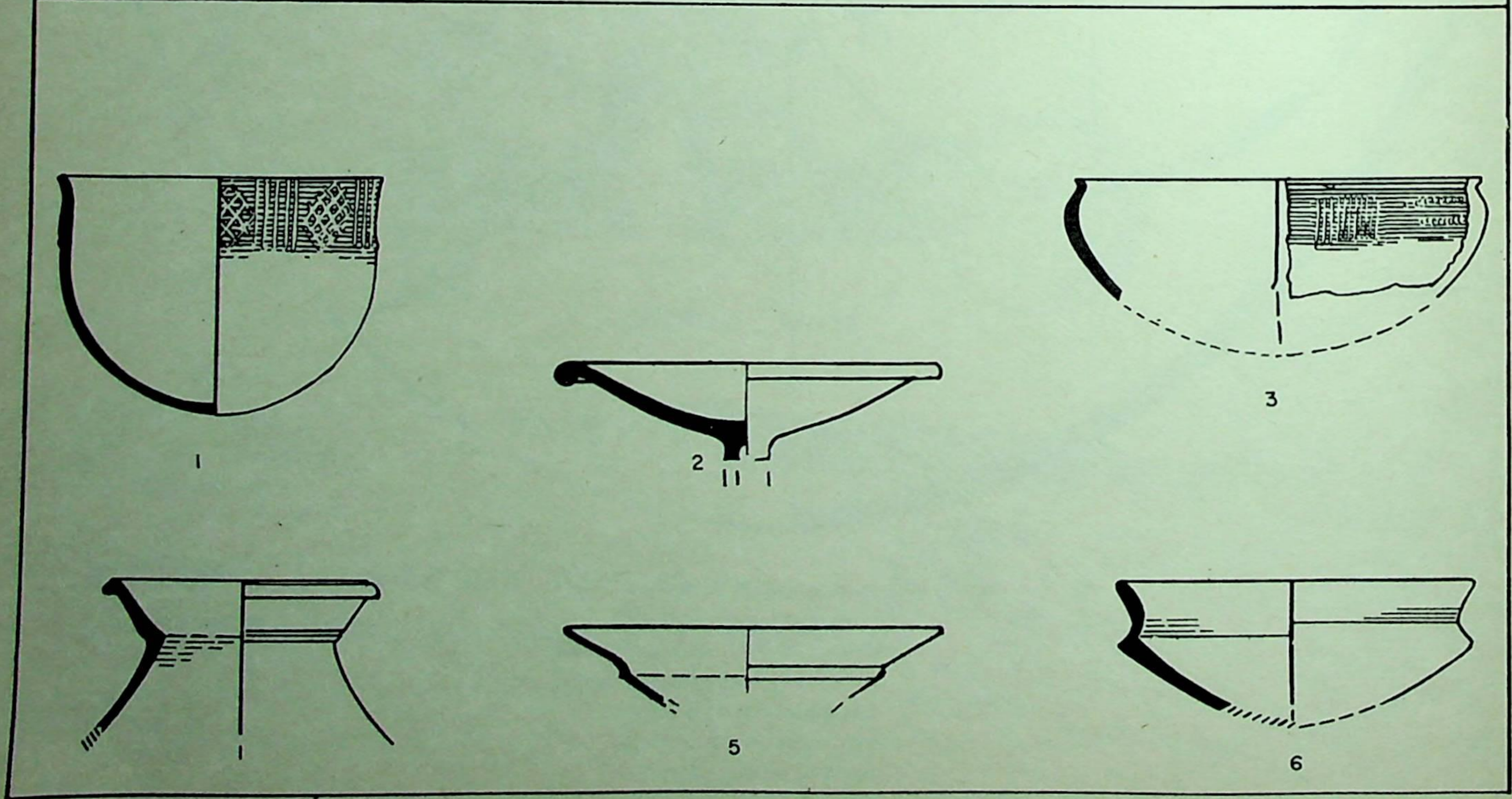
SANGHOL: 1984-85 DISTT. LUDHIANA. (Pb.)

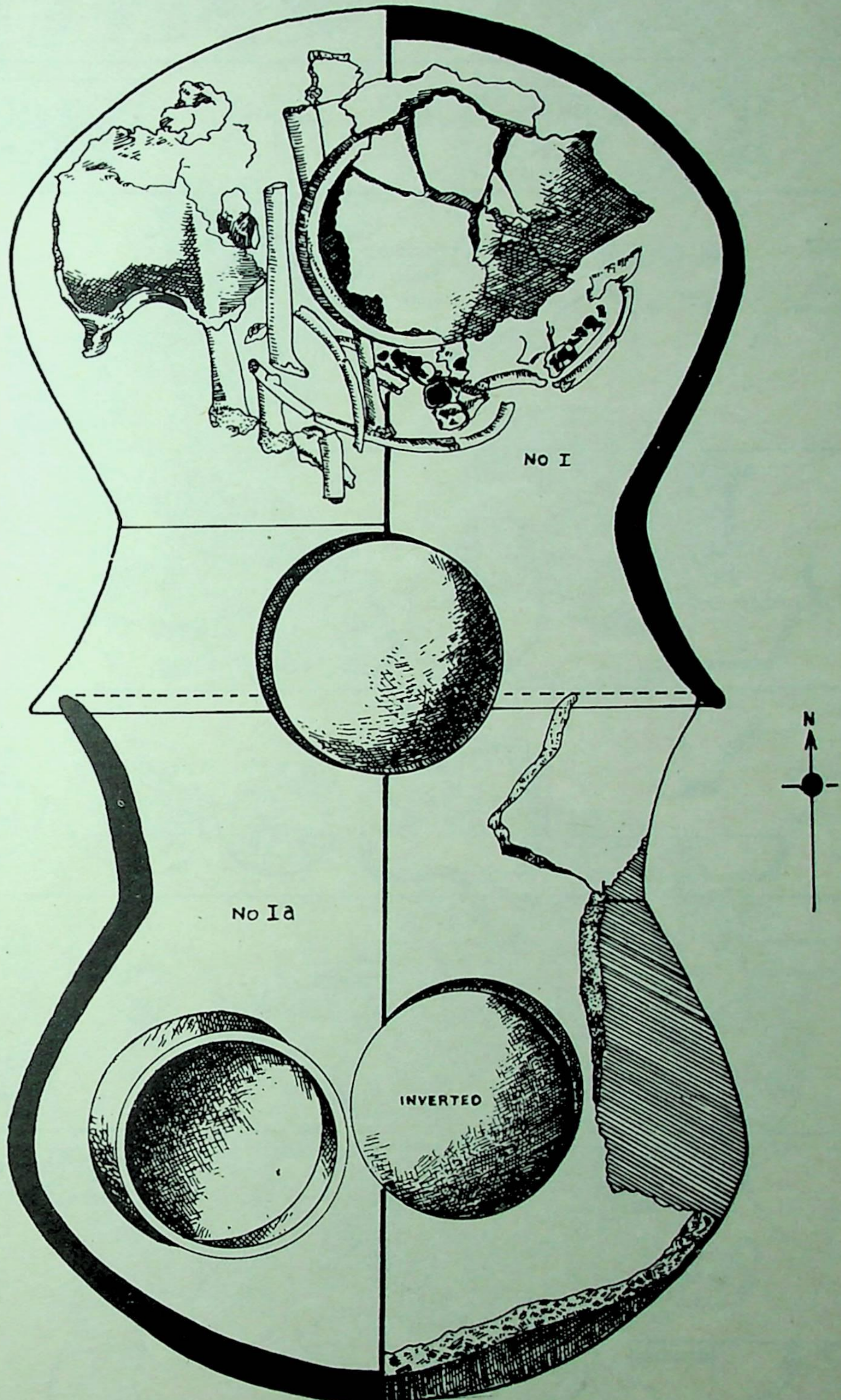
BUDDHIST STUPA & MONASTERY COMPLEX



40. Inamgaon: A large pot with engraving of a cart drawn by two humped bulls; to its left, the spouted pot has painting of a boat; top right shows a very narrow-mouthed vessel


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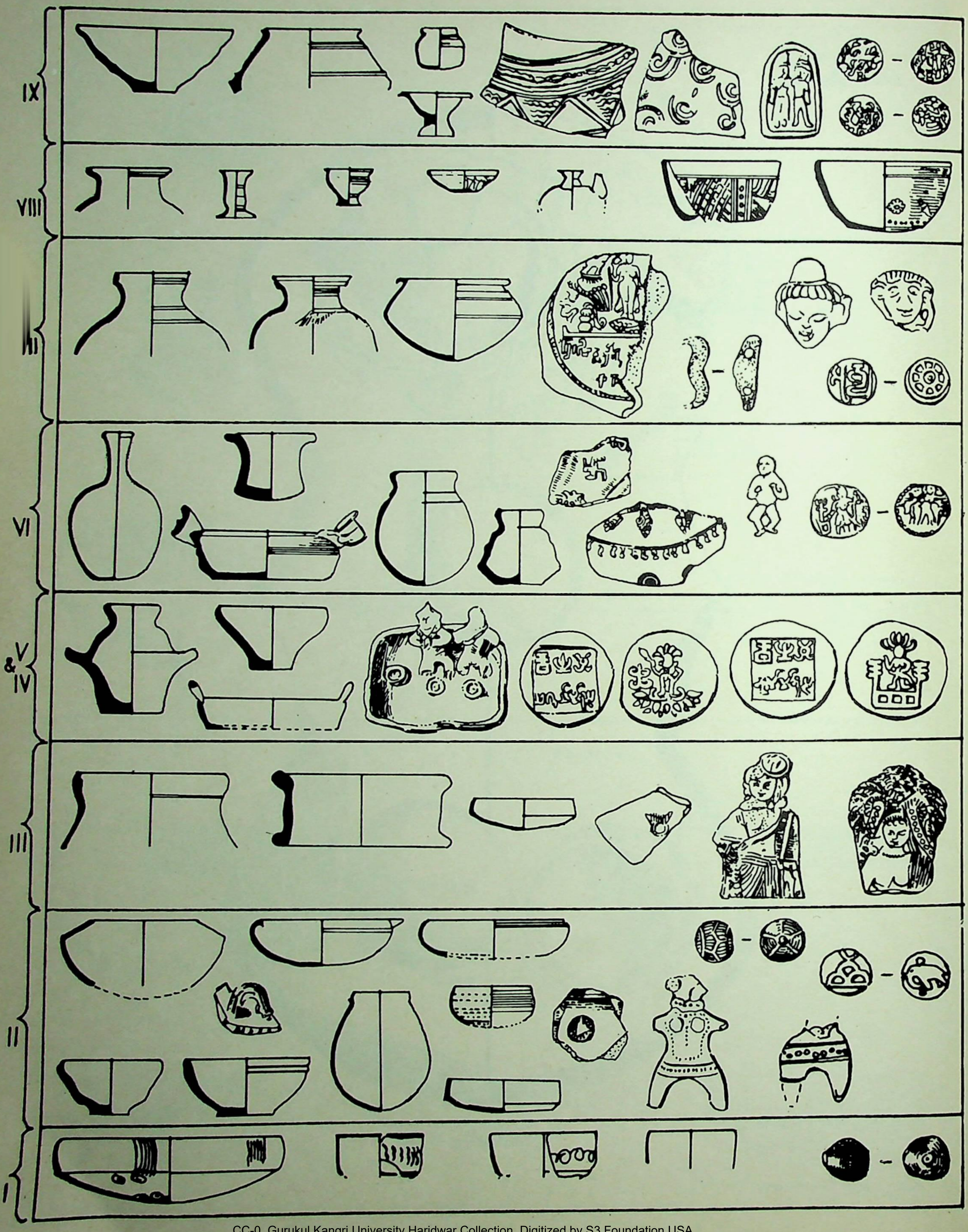


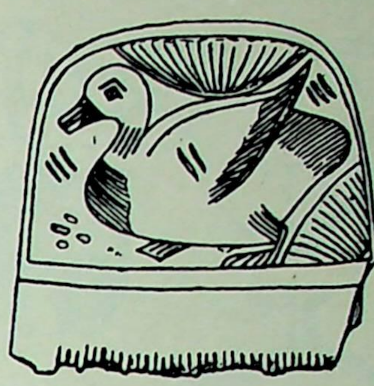
41. *Facing page Above* Navdatoli 1-4, 6-9 Pottery types; 5 Blades

42. *Below* Ahar: 1-6 Pottery types

43. Nevasa: Burial Urn of Chalcolithic Period

44. *Overleaf* Ahichchhatra: Sequence of Cultural Periods


IX
VIII
VI
V & IV
III
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I



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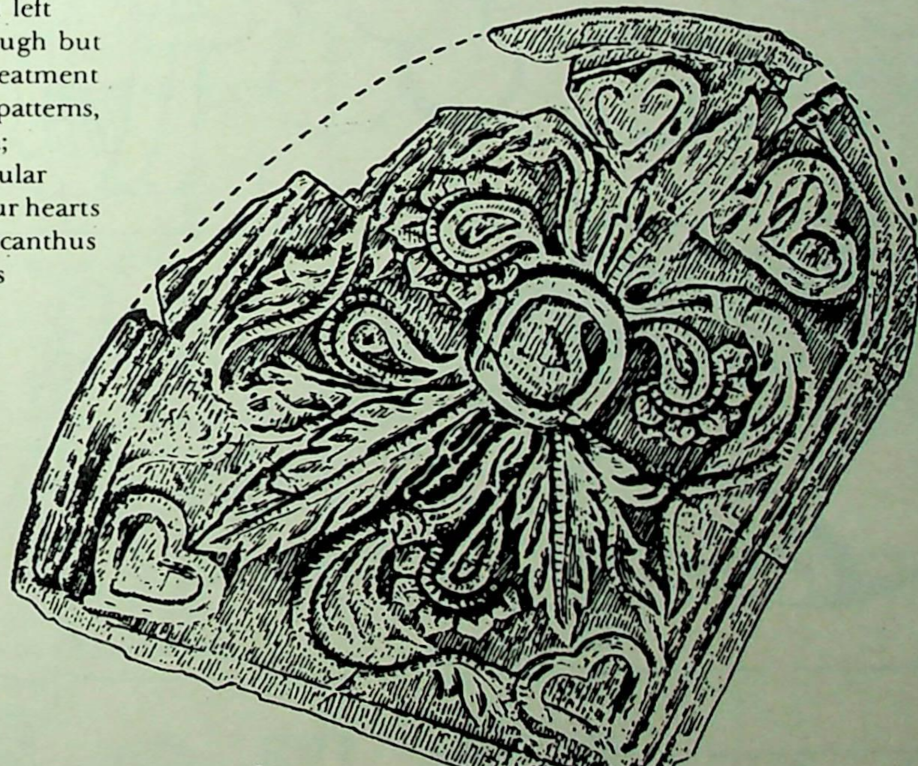


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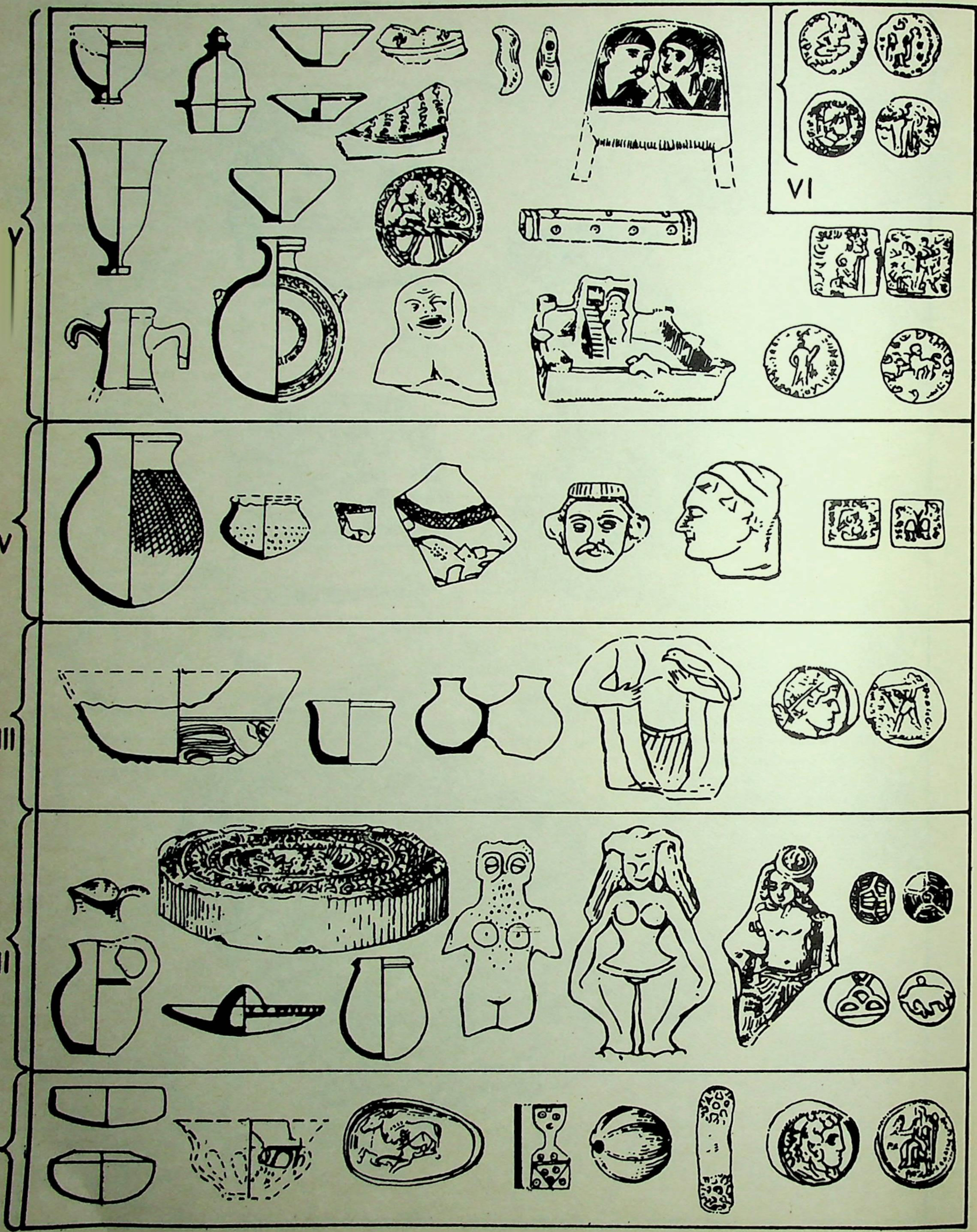


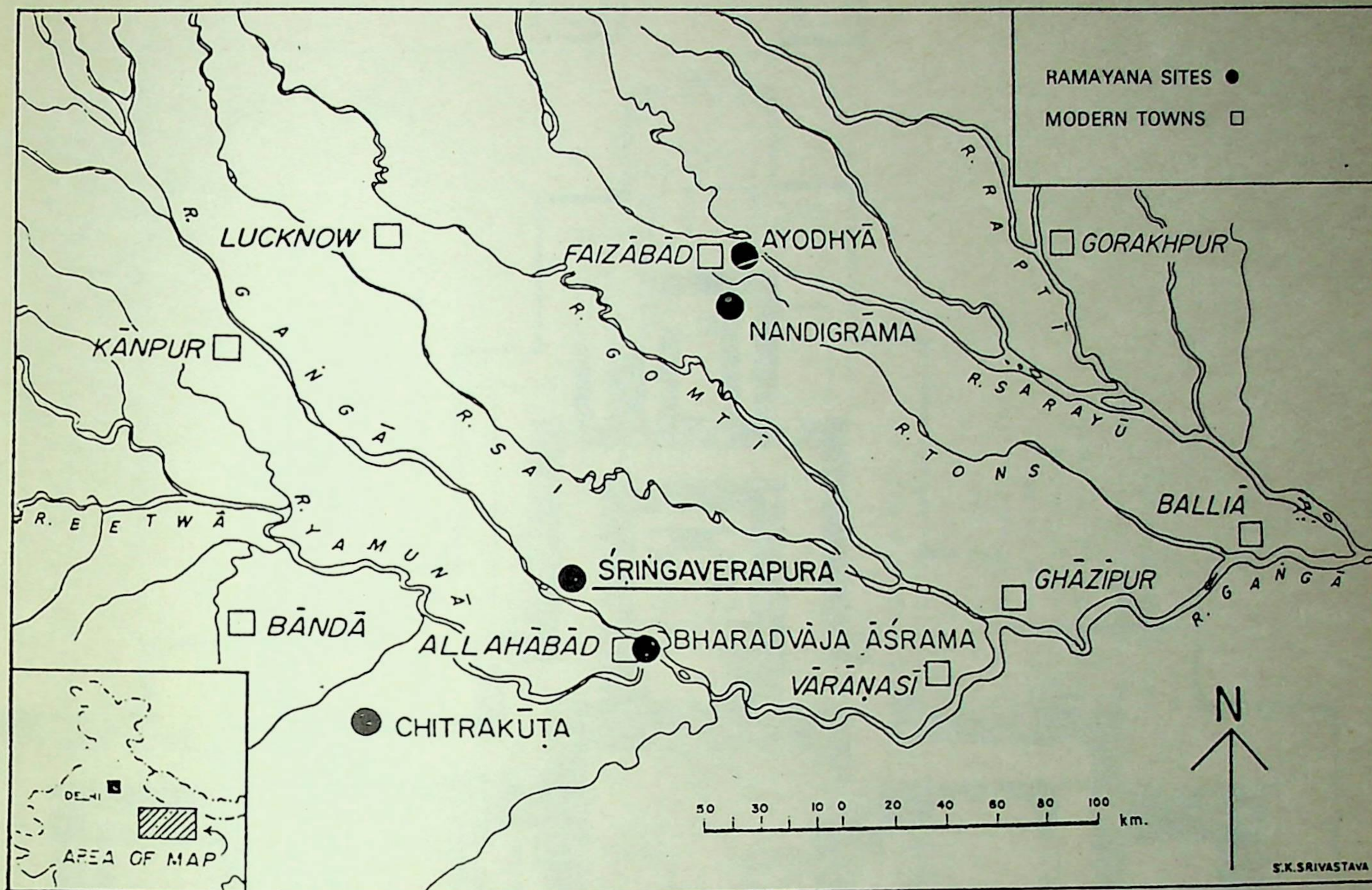
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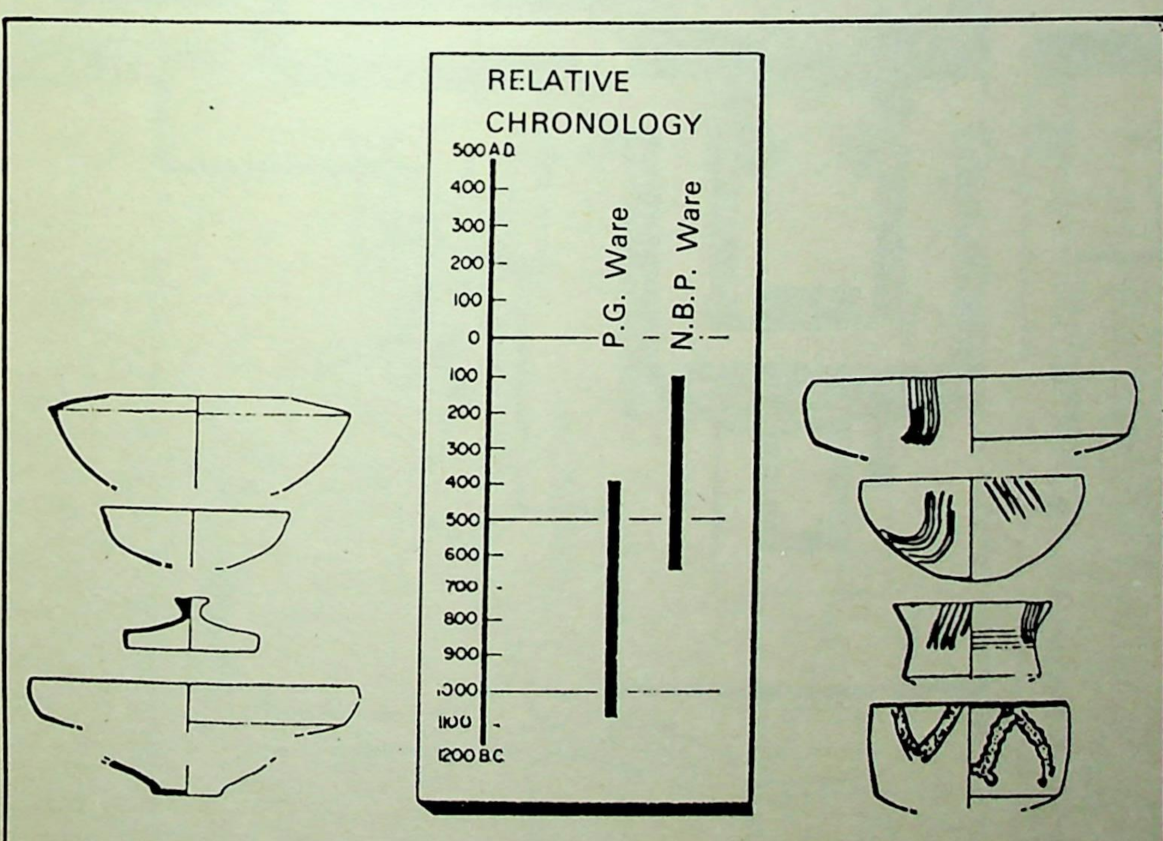
45. Taxila (Sirkap): 1, 3 Ivory comb, both sides; 2 Medallion of copper repousse: within wreath bust, right hand raised holding a flower, tunic pinned on left shoulder—technique rough but design, including the treatment of the wreath in different patterns, typically Graeco-Roman;
4 Copper-sheet of irregular shape embossed with four hearts and flowing design of acanthus leaves and stylized lotus flowers



4


VI
V
IV
III
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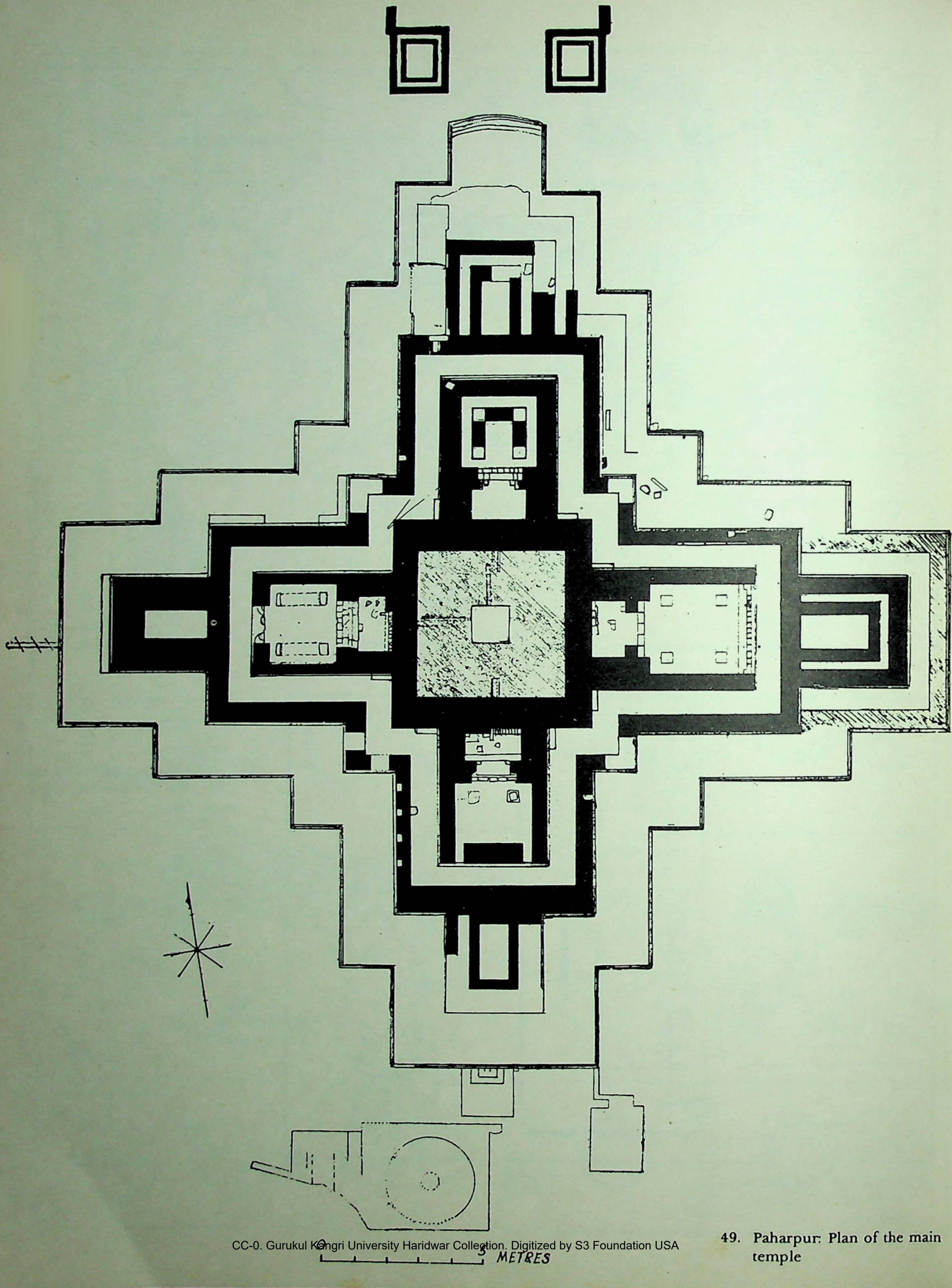




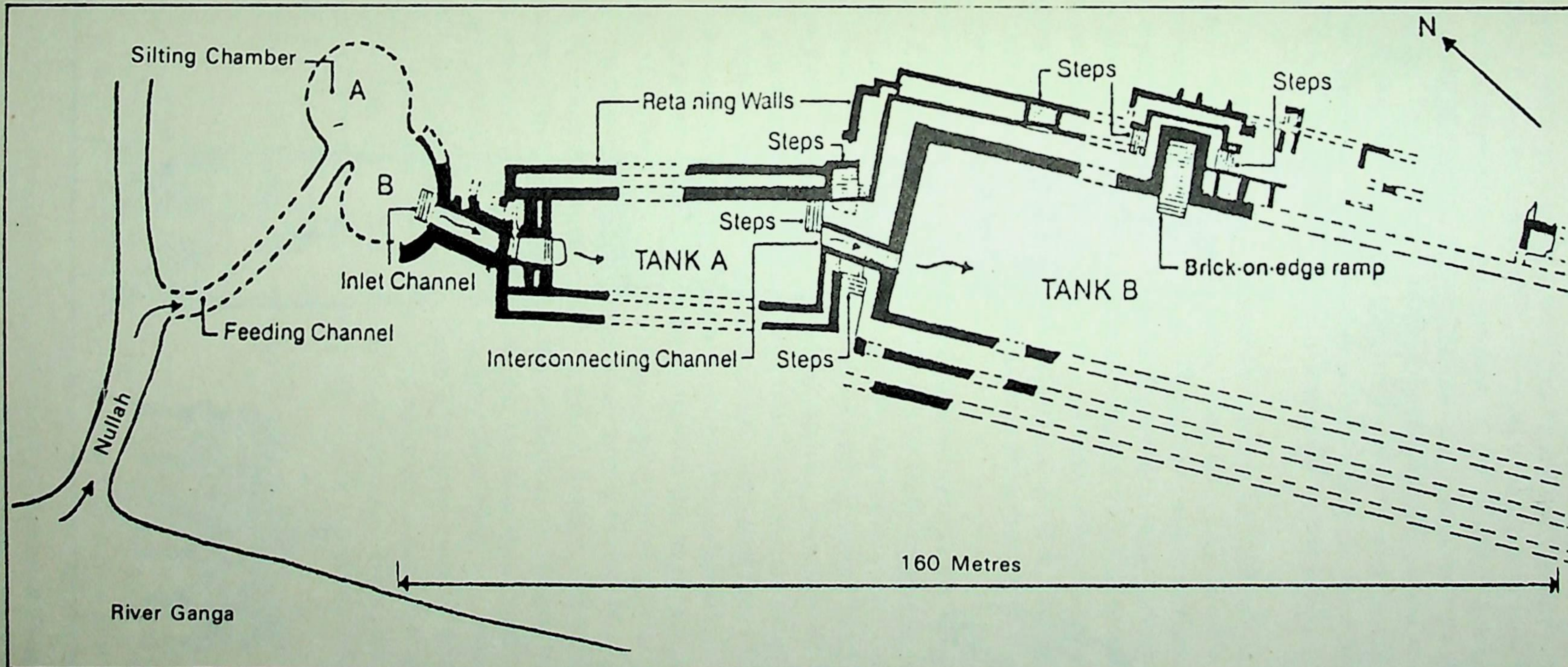
47. Sites connected with the *Ramayana* story

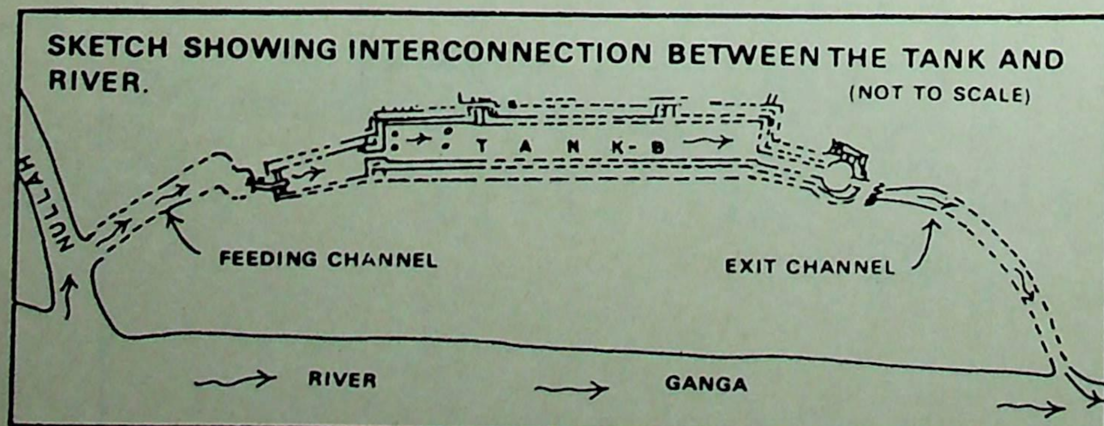
48. Relative Chronology of Painted Grey Ware and Northern Black Pottery Ware

46. *Facing page* Taxila (Sirkap): Sequence of Cultural Periods



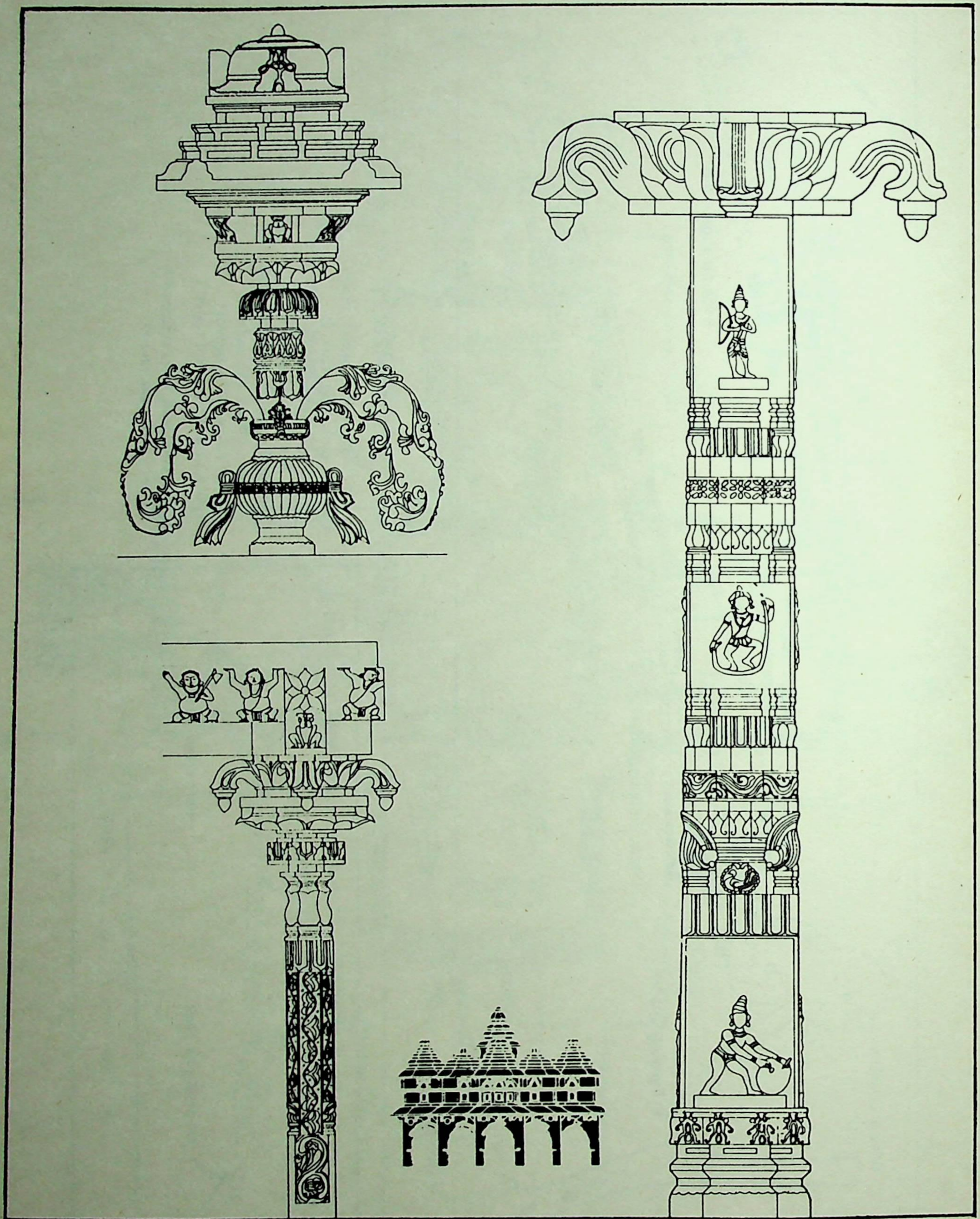
49. Paharpur: Plan of the main temple





50. Sringaverapura: A sketch plan of the tank. Top, tank. B, showing the channel from tank A with steps over which the water cascades; in the foreground are two wells, which connect the bed of the tank with sub-soil water.

51. Sringavarapura: Inter connection between the tank and the river.



52. Hampi: Ramachandra Temple; *Left* Pilasters on outer walls of principal shrine; *Right* Porch column of principal shrine

reeds, which were apparently the material used in walls and roofs, also exists. The Painted Grey Ware people appear to have abandoned Ropar about 700 B.C. A new settlement had, however, sprung up there by 600 B.C., and a coarse grey pottery, clearly developed from the Painted Grey Ware tradition with which it shares many characteristic shapes, was now in use. Associated with it is a homogeneous assemblage of the N.B.P. Ware and plain red ware. These earliest historical levels (Period III), dated to *circa* 600-200 B.C., also yielded punch-marked and uninscribed cast coins, some with Taxila symbols, copper and iron implements and an ivory seal inscribed in Mauryan Brahmi characters. River-pebbles set in mud-mortar were used for buildings in this period, although houses of mud and kiln-burnt bricks were by no means uncommon.

The next occupation (Period IV) covers the rule of the Sungas, Kushans, Guptas and their successors, from *circa* 200 B.C. to 600 A.D., and reveals several successive building levels. There are terracotta figurines in Sunga and Kushan styles and include a seated figure of a lady playing on the lyre which reminds one of the figures of Samudragupta (340 A.D. to 380 A.D.) in a similar position on his coins. A number of terracotta sealings in characters of the fifth-sixth centuries provide the upper date of the period. The pottery of these levels is for the most part red and is frequently decorated with incised or impressed motifs, natural or religious.

After a break, evidence exists of a new occupation (Period V) commencing about the ninth century and lasting two or three centuries. The occupation by this time had become confined to the southern part of the site, where the present town lies. Neatly constructed and spacious brick buildings of this period suggest a good measure of prosperity. A new town (Period VI) sprang up here, possibly after a short desertion, which continues to flourish to this day, although the sequence is closed with a terminal date 1700 A.D. to separate the archaeological remains from recent accumulations.

The excavator observes: 'The pottery of the medieval periods is avowedly utilitarian, with little pretension to aesthetic form and ornamentation, except perhaps the painted glazed ware introduced by the Muslim invaders.'

Two kilometres south-east of Ropar is Kotla Nihang Khan which appears to represent an earlier Harappan immigration, and Ropar a later one. Another eight km south of Ropar is Bara, which has also Harappan material with some traits of an antecedent culture recently identified by the excavator. Earlier it was labelled as the site of the post-Harappan culture. Remains of the Bara civilization have also been found at Sanghol, near Morinda, in the Punjab. This civilization was contemporaneous with the Harappan civilization. The excavations have revealed house plans in six structural phases, an industrial complex and gold beads.

At Dher Majra also, the amalgam of Bara and Harappa has been noticed.

Bara

The village of Bara, District Ropar, Punjab, is located 8 km. south-west of Ropar. The mound here was discovered in the wake of the discovery of Harappa culture at Ropar. Some exploratory trenches were laid here in 1955, and again in 1971, by Dr. Y.D. Sharma of the Archaeological Survey of India.

The mound measures approximately 550 m. north-south and 300 m. east-west. The 4 m. thick accumulations here reveal a single culture throughout, although the deposits have been divided into lower, middle and upper levels.

The site is extremely rich in a distinct class of pottery. Made of well-levigated clay, the pottery is wheel-turned and possesses a firm and consistent texture. It is self-slipped or slipped with a brown-coloured clay which gets burnt to shades of brown red. Designs are either painted in black or chocolate brown, or incised with wooden points or brushes. A third method of ornamentation consists of drawing lines by a blunt-edged object on the smooth pot surface before firing, so that the design drawn acquires a burnished appearance when burnt. This method has been followed even by the Harappans in this region.

Some of the basic pottery types bring to mind Indus parallels, such as dish-on-stand, large basin or bowl with flaring sides, and large jar with a bulging convex profile, all possessing a thick and sturdy section. Parallels, in thin sectioned ware, are not close, and only a general resemblance is seen in small round jars with disc base or in elongated convex-profiled bottles. There are, however, certain features in these shapes where the correspondences break down; for instance, most of the Bara ware is embellished with painted or incised patterns, while a large proportion of the Harappan ware is plain. The stem of the Bara dish-on-stand is generally short and wide, as distinct from the long and slender stem of the Harappan counterpart. The long stem of Bara has a projecting ledge below the dish. Moreover, the sloping of 'drooping' rim of the dish, often painted, is another Bara characteristic.

Other differentiating Bara features in otherwise parallel shapes are the open base of the basins, incised designs on the interior sides of the basins, and pedestalled base of large bowls and dishes. Besides, shapes that are popular in mature Harappan levels are missing at Bara. Some of these are the Indus goblet with a pointed base, wide-mouthed large storage jar with concave profile above the base, flat, thick (*thali*) with flaring sides, large perforated jar, 'S'-profiled jar and cup with perforated handle. On the other hand, among diagnostic shapes or features of Bara pottery are large bulbous jar with long neck and flaring rim, jar with collared rim, the body being bulbous or bluntly carinated at the belly, cooking utensil or water-jar incised on shoulder and 'rusticated' at the bottom with 'honey-combed' ridges, brush-made spirals or fingered patch-work.

Some of the shapes that are common in the Harappan and pre-Harappan pottery are also found in the Bara ware; such as, carinated dish with flaring and externally concave sides, beaker with restricted base, knobbed lid, and lid with out-turned rim, often painted with single or double arc.

Among the painted motifs common with the Harappan may be named 'nets' of different shapes, fish, tree, multiple wavy lines and chequer-board pattern. Conversely, such characteristic Harappan designs as intersecting circles, horizontally drawn opposed loops enclosing 'cross'-shaped motif, *pipal* leaf, peacock and fish-scales are absent in Bara paintings.

Wavy, zig-zag or looped lines form a basic element both in painted and incised Bara decoration. A multiplicity of designs is obtained by combinations of horizontal grooves and wavy, zig-zag or criss-cross incised lines. Characteristic among painted motifs are 'horn' or 'bow'-like curve crowned by an arrow-head or some other motif, opposed triangles or semi-circles, 'willow' leaves in vertical or horizontal series, parallel wavy line enclosing 'eyes' or lozenges, hatched 'net', loops with humps surmounted by lines, grouped triangles, squares or rectangles with alternate hatching in different directions, series of solid dots enclosed by horizontal bands, 'eyes' fringed by vertical lines, 'wings' surmounted by lines, square with 'bastion' or scrolls at corners,

chain and plain wide band on neck. Flora figures in petalled rosette, twig with needle leaves, front and tree with plantain-like leaves. Among fauna, fish is common, bird and animal rare. Several of these designs are absent from the Harappan repertoire, but occur on pottery from pre-Harappan Kalibangan, Kot-Diji (Pakistan), Amri (Pakistan), Mundigak (Afghanistan) and from sites in northern Baluchistan.

All the characteristic elements of Bara ware are present at the site from the lowest levels. From the middle levels begin to turn up some mature Harappan forms and they continue in the upper levels. But the number of such sherds is so small that they signify a contact with the Harappan tradition and not an overlap at Bara itself. Prominent among these types are scored Indus goblet, elliptical goblet with footed base, small vase with button base and sieve with animal-headed vertical handle. In the upper levels, some of the small globular vases show bright red slip, the range of painted motifs becomes poor, grouped painted bands become common, and the incisions on shoulders of the pots become shallower.

The evidence of housing at Bara was limited to fragments of walls of cut *kankar* stone and mud-bricks, the latter measuring 11×12×44 cm. and conforming to the size of the Harappan brick. Mud-brick walls, however, were noticed only in middle levels. Fragments of kiln-burnt bricks were available, measuring 6.5 cm. and 14 cm. in thickness and width, the length remaining unknown. Burnt clay lumps with impressions of reeds indicated that houses were made of wattle and daub.

'U'-shaped cooking hearths and an underground oval furnace or small kiln were also found. The structural details of the furnace were similar to the furnaces found at Kotla Nihang Khan. From the furnace came a small painted vase.

Among the articles of household-use were stone saddle querns and pounders. Balls of uncertain use were made of stone and baked clay. Terracotta was also the material for 'cakes', including triangular ones, animal figurines, bangles and beads. Beads, bracelets, bangles and incised balls were made of faience. Faience bangles, in fact, are plentiful on the site, but in the upper levels they appear to have become thinner in section. But steatite, which is popular on Harappan sites, was totally absent at Bara. Use of semi-precious stones was limited, being exemplified by only a few beads of agate and carnelian. Bone was utilised for points, some of which may have served as stylii. A bangle fragment, fishing hook and several pieces of wire evidenced the limited use of bronze.

What puzzles the mind is an unidentified terracotta object, measuring 10 cm. square at the base, and 17.5 cm. high. Tapering in outline, with two bifurcated curved upper ends, it has three finger depressions on the front and the back. This curious object is also reported from Sanghol and Chandigarh.

Bara has given four C-14 dates. Considering that there is a substantial deposit of 1.80 m. below the level yielding the date of 1890±95 B.C., Bara would date at least to a span of 2000 to 1600 B.C., with no unreasonableness involved if we add another century at either end.

According to Dr. Sharma: 'Altogether the total assemblage of Bara is not Harappan, some of the ceramic shapes which are common between the two occur also in related pre-Harappan cultures. Its painted designs go largely with the pre-Harappan traditions. Again, with pre-Harappan Kalibangan it shares fabrics B, D and F. Not only does Bara pottery occur with the mature Harappan cultural vestiges on the upper Sutlej, such as those at Kotla Nihang

Khan, Ropar and even Chandigarh, it is spread all over Punjab and parts of Haryana, with its basic forms extending even into the upper Ganga-Yamuna Doab, as at Alamgirpur. It appears that it is a culture which is parallel with the Harappan at least along the Sutlej, and is perhaps in the main, the rural facet of the contemporary urban life dominated by the Harappan influences.'

Surkotada

Surkotada, where a fortified settlement belonging to the Harappan period was discovered, lies about 160 km. north-east of Bhuj in Kutch in the State of Gujarat.

A sustained exploration was conducted by a team of the Western Circle of the Archaeological Survey of India led by Jagat Pati Joshi between the years 1964 and 1968 and consequently as many as eighteen sites of Harappan civilization could be located from the Indo-Pakistan border to the tip of Saurashtra — covering the entire region of the District of Kutch. Plotting of these sites indicated that they formed the sites which were situated on the ancient routes from Sind to Kutch. It also indicated that on the south-eastern extension of the Harappan civilization, the Harappans moved to the area of Kutch by these land routes. As a matter of fact, Kutch appeared to be a halfway house between Sind and Saurashtra in the eastward expansion of Harappan culture.

At the time of its discovery, i.e., December 1964, the mound of Surkotada, Taluka Rapar, itself pretended to be a potential site and offered immense possibilities for the spade of the archaeologist. Excavations were accordingly taken up during two field-seasons in 1971 and 1972 by the Excavations Branch I of the Archaeological Survey of India, Nagpur, under the direction of Jagat Pati Joshi, who had earlier conducted the exploration in this area.

The excavations are of considerable importance inasmuch as they throw light not only on the expansion of Harappan culture from Sind to Gujarat *via the land route*, but also on the settlement-pattern and evolving sequence of the Harappans in Kutch.

A sequence of three cultural periods ranging from *circa* 2100 B.C. to *circa* 1750 B.C., each interlinked with the other, was revealed in the excavations.

The earliest settlers at the site were Harappans with some affiliation to an antecedent culture. Their settlement, which was fortified from the very beginning, consisted of two parts, the 'Citadel' to the west and the 'Lower City' to the east. The fortifications were built of mud and mud-bricks, retained at places by a rubble veneer of five to eight courses of the base. For the citadel, the basal width of the fortification wall was approximately 7 m. At a later stage, a buttress of mud-bricks, 1.70 m. wide with a rubble cushion, was provided on the inner side of the partition-wall separating the citadel from the lower city. The citadel had two entrances, one on the south and the other on the east, for inner communication with the residential annexe. For the lower city part, which had an entrance in the south-eastern corner, the width of the fortification wall was 3.25 m.

The houses were built of rubble masonry or of mud-bricks. Though three phases of structural activity were recognized in the area under excavation, no complete house-plan could be traced. In the residential area, remains of the drainage system were also found. Although the main ceramic industry of the period was characteristically Harappan, both painted and plain, a cream-slipped ware painted in chocolate brown, a Reserve slip ware and a polychrome ware were also in use. Some of the latter class of wares have parallels in sites of pre-Harappan affiliation in Sind and Iran.

The other interesting finds of this period were an inscribed steatite seal, long chert blades, some of which were nearly 12 cm. long, beads of steatite, carnelian, lapis lazuli, faience and terracotta, rings, bangles and spear-heads of copper, terracotta cakes, cart frames and wheels, bangles, stone pestles, saddle, saddle querns and sling balls and a few sherds bearing painted script and a fragmentary ivory comb.

A large number of *linga*-type objects of unbaked clay which could probably be associated with a cult were also found. A charred rope was a unique find.

The bones of equus from the earliest levels of the period are noteworthy and have a significant meaning in the culture complex. The cemetery of the period was located in the north-west of the city area. Excavations revealed that pot-burial was perhaps one of the modes of disposal of the dead. The grave-pits containing pottery deposits and fragmentary bones were topped either by a cairn or a slab.

During the next period which followed without any break, the Harappan elements continued with a decreased frequency. A new ceramic industry, a coarse red ware, both painted and plain, was added to the repertoire. The settlement, however, did not undergo any change except that the width of the fortification-wall for the citadel was reduced to 6 m. A few sherds of Reserve slip ware and cream slipped ware were also found with occasional occurrence of polychrome ware.

The latest period at the site, which again closely followed without any break, marks the advent of a people who used white-painted black-and-red ware akin to that of the Ahar culture of Rajasthan. The Harappans continued to live at this site as evidenced by the occurrence of typical Harappan pottery and other antiquities. No lustrous red ware of Saurashtra was found at this site.

The new arrivals constructed the fortification in rubble. The basal width of the fortification-wall was on an average between 3.50 m and 4 m. The citadel had bastions on each corner and a centrally placed gateway complex with a 1.70 m. wide passage on the southern side. The gateway consisted of a series of steps and a ramp leading to the entrance. On either side of the entrance was a guard-room. There was also another entrance which opened into the residential area. Curiously enough, the width of the passage of this entrance was also 1.70 m. A semi-circular structure was provided on the citadel side of the passage. Later, this passage was blocked and narrowed to provide a drain on the side.

The fortifications, including the bastion, seem to have been extensively repaired as exposed by one of two massive revetments. The lower city area had a separate entrance on the south. In the citadel area, a house consisting of nine rooms was uncovered. Remains of lanes and streets were also traced. In the residential area, the average-size house had five rooms interconnected with one another and having platforms facing the street for sitting or selling merchandise. The average size of a room was 2.90×2.50 m.

The cultural material of this period consisted of white painted black and red ware represented by bowls and dishes, bowls with handles, channel bowls with handles, Harappan pottery including goblets and perforated jars, two hoards of steatite and carnelian beads, a big wheeled terracotta bull, a square terracotta tank, terracotta cart frames, wheels, an inscribed Harappan seal, and copper and faience objects.

One big chisel of copper measuring 3.05×3.2 cm. and a hoard of copper beads and bangles were other important finds.

Among animal remains, bones of equus, camel, bovines and an elephant-tusk are noteworthy.

It was for the first time that such a massive fortification with an elaborate gateway complex belonging to the first half of the second millennium B.C. was discovered in India after the Partition.

Dwarka

Dwarka (Dvaraka or Dvarika), situated at the northwestern tip of the Saurashtra (Kathiawad) peninsula, and overlooking the Arabian Sea, was a harbour of considerable importance until 1880 A.D. for ships coming from the west. It lost its importance to Port Okha after the construction of a sea wall in 1900 by the erstwhile Baroda State which resulted in narrowing the entrance for large boats.

The search for ancient Dwarka by archaeologists had begun in the thirties and forties of this century, when Dr. Hirananda Sastri carried out a small-scale excavation in the island of Bet Dwarka, also known as Shankhodhara, at a site not far from the Dwarkadhish Temple. He had recovered pottery and other artefacts including a potsherd inscribed Nandasa in Brahmi characters of the 1st-2nd century A.D.

Later in 1950, M.S. Vats and B.K. Thapar explored Bet Dwarka. Then also no evidence of the 1st-2nd millennium B.C. was found, the main reason being that the cliff sections were not examined. So far as the Dwarka on mainland was concerned, Dr. Jayantilal Thakkar evinced keen interest and collected from the foundation trenches of houses under construction pottery of the early historic period and a few specimens suspected to be of protohistoric period.

Scientific excavation was undertaken by the Deccan College Post-Graduate and Research Institute in 1963 under the guidance of Dr. H.D. Sankalia. The excavations had to be limited to an area of 8×6 m., later reduced to 2×2 m. below 6 m. depth. Medieval and early historic occupation layers were dug through and the earliest layer was dated to the 1st century A.D.

Summarising the findings, Dr. Sankalia observes: "The foundation of the first Dwarka might be placed at a period just before or around the beginning of the Christian era, but not much earlier." The excavators Ziauddin D. Ansari and M.S. Mate observe: "A large portion of potsherds is rolled, that is, they show the effect of water action, having been tossed about in the sea and lying buried in the sand for 2,000 years. This proportion goes on increasing as we touch deeper and deeper levels. Some sherds have escaped this damage completely even though recovered from a depth of 31 feet," which the excavators could not explain. The excavators continue: "The first Dwarka lies buried under nearly 20 feet of sand, obviously because of the encroachment of the sea. Even the second Dwarka was covered by the sea, burying it under 6 feet of sand."

The excavators conclude: "From our observation of the various places in and around Dwarka, as also from the evidence of excavation, one can definitely say that this is the Dwarka mentioned in the *Mahabharata*, the Dwarka Mahatmya of *Skanda Purana* and the *Ghata Jataka*. In particular, one can say that the Dwarka described in such a great detail as a sacred *tirtha* by the *Harivamsa* probably came into existence after the second submergence in the sea of two earlier Dwarkas because it gives very minute description of so many temples and this could have been possible only by a writer who had probably visited Dwarka and seen the temples. But the writer was quite sure that the Dwarka he was describing was twice submerged into the sea and therefore the earlier Dwarka belonged to Sri Krishna: "Of course, of this we have no positive

evidence excepting the fact that it is possible to say that the earliest Dwarka was founded at least in the 1st-2nd century B.C.-A.D."

According to S.R. Rao: 'Sankalia's conclusion that the first Dwarka belongs to a period not earlier than the 1st-2nd century B.C.-A.D. runs counter to evidence then available to archaeologists. There are as many as a dozen sites of the Late Harappan and Post Harappan periods (1900-1300 B.C.) in Jamnagar district. It is highly inconceivable that a port of the importance of Dwarka would not have been occupied in the 2nd millennium B.C., especially when less important ones near Jamnagar were occupied. B. Subba Rao and P.P. Pandya had excavated in the fifties Amra, Lakhabawal, Vasai, etc., and produced evidence of Late Harappan and Post-Harappan occupation. Excavation by Pandya at Prabhas (Somnath), another important site of *Mahabharata* fame on the west coast of Saurashtra, had also yielded evidence of settlement in the 17th-13th centuries B.C.'

The Archaeological Survey of India was therefore looking for some site in Dwarka town where excavation could be conducted. An opportunity arose in 1979 when the two-storeyed modern buildings in the forecourt of the Dwarkadhish Temple hiding its view were pulled down by S.R. Rao. Below these buildings well-preserved walls and plinth of an 8th-9th century temple (Temple III) dedicated to Vishnu were traced in the course of scientific excavation. Although the roof of the temple was destroyed by the sea, the beautifully carved friezes of elephants, idols of Vishnu, Varaha, Brahma, Siva-Parvati, Lakshmi, scenes from folklore and even *mithunas* and *maithunas* are well preserved on account of the sand deposited over the ruined temple during the storm wave or hurricane. The destruction of Temple III seems to have taken place early in the 12th century A.D. The plinth and pillars of another temple traced in the enclosure wall suggest that Temple IV was built some time in the 12th century, which suffered damage due to vandalism. The present Temple of Dwarkadhish consists of an inner temple used as sanctum or *garbhagriha* (13th century A.D.) and *sabhamandapa* of 5 storeys. Enclosing the inner temple is the outer one of 7 storeys rising to a height of 157 m. This is Temple V. Below Temple III were noticed in the course of excavation plinths of two earlier temples built between the Ist century B.C. and the 2nd century A.D. It became obvious that Temples I, II and III were built successively one over the other after the earlier one was destroyed by the sea. The dating of these temples is done on the basis of associated pottery known as the Red Polished Ware (1st-5th century A.D.) and small copper coins *(Karshapanas*) which were in circulation between the 2nd century B.C. and the 2nd century A.D. Further digging below the foundation of Temple I brought to light habitation deposits of the 10th century B.C. and of 14-15th century B.C. both sealed by sandy layers. The earliest settlement yielded a distinct pottery known as the Lustrous Red Ware which occurs in well-dated levels of Prabhas and Rangpur in Saurashtra and Ahar in Rajasthan.

S.R. Rao, who is the pioneer in underwater archaeology of India, records: 'The archaeological excavation on shore in 1979-80 confirmed that a culturally advanced settlement existed at Dwarka in the 16-14th centuries B.C., and also yielded evidence of destruction of this settlement and later ones.

'The chronology of ancient Dwarka is tentatively fixed as follows:

First Dwarka	1400-1300 B.C.	
Second Dwarka	900-500 B.C.	
Third Dwarka	2nd century B.C.	Temple I
Fourth Dwarka		Temple II

Fifth Dwarka	12th century A.D.	Temple III
Sixth Dwarka	12-13th century A.D.	Temple IV
Seventh Dwarka	13-15th century A.D.	Inner and outer portions of Dwarkadhish Temple
Eighth Dwarka	Post-16th century A.D.	Modern town.

Mere destruction of Dwarka of the *Mahabharata* times by the sea may not prove submergence of Dwarka as mentioned in the *Mahabharata*. It was therefore decided to explore the sea near Dwarka. There was another aspect of the problem. Ancient texts say that Dwarka was built on the ruins of Kusasthali which was in the sea. It is further stated that Sri Krishna reclaimed land and fortified the town which he made impregnable by the enemy. The reason for settling the Yadavas at Dwarka, bringing them all the way was to give them an abode safe from the attacks of Jarasandha's army. That was the main reason for leaving Mathura.

Bet (Beyt) Dwarka (Shankhodhara)

The island of Bet Dwarka is considered as holy as Dwarka on account of its being the resort of Krishna. On this island off Port Okha which is 30 km. from Dwarka, there is a late medieval temple of Dwarkadhish and a few others known as the Neelakantha Mahadev, Shankha Narayana and Abhayamata, each one indicating an early historic settlement. But as the main issue was one of finding evidence of submergence of ancient Dwarka which is also said to be an island, the cliff sections along the shore were explored and fortunately structural remains were noticed in the southern shore. The section in which a part of a long rubble wall is *in situ* yielded pottery of the Late Harappan and Post-Harappan periods. In the beach also similar pottery and rejected shells and bangles were found.

According to the excavator: 'A rubble wall about 20 m. long still *in situ* in the southern cliff of the island provided a clue to the submergence of the protohistoric settlement 3,400 years ago. Pottery and other artefacts including rejected *sankhas* (chank shells) and bangles of shell were collected from the sections of the site where the rubble wall stands. It must have been originally several metres thick as indicated by the cross walls and served as a city wall.'

Rao led a team of scientists from the National Institute of Oceanography, Goa, in April, 1983, and undertook exploration in the sea to ascertain if any structural remains of the submerged town could be traced. Fortunately, a massive wall of large building blocks of prismatic shape was found *in situ* on the wave-cut bench in the intertidal zone. At the high tide the water level rises 3.6 m. above the wall which is exposed at low water for an hour or so. The pottery, shells, etc., collected from the intertidal zone were found to be identical with those dated 1400-1500 B.C., at Rangpur, Prabhas and other sites in Saurashtra. Expert divers dug in the sea and found compact layers yielding chert blades and fragments of pottery of still earlier times. The building blocks of the houses enclosed by the rubble wall on shore and toe-wall in the sea lay scattered. It was obvious that an ancient township of 1500-1400 B.C. was submerged by the sea in the island of Bet Dwarka (Shankhodhara). This date approximates to the date of the *Mahabharata* war. When the protohistoric township was built on the wave-cut bench, the highest water level must have been at least one metre below the bench. Since the destruction of the township in *circa* 1380 or 1400 B.C., there is a net rise of 1+3.6=4.6 m. in sea level.

The compact habitation layer 1 m. below loose deposit of clayey-sand in the seafloor opposite the submerged wall suggests that before Dwarka was built, another earlier town existed here. In this connection, it may be recalled that Krishna is said to have built Dwarka in the sea where once Kusasthali built by Raivata had existed. It is, therefore, obvious that there is a grain of truth about the events mentioned in the *Mahabharata, Harivamsa, Bhagavata* and *Vishnu Puranas* especially about Dwarka and its submergence.

Evidence of shipwrecks in the area points to the fact that after the submergence of the protohistoric Dwarka of 1500 B.C., some vessels that came here immediately afterwards, that is, in the next phase of occupation, must have foundered on the rock and sunken buildings.

Among the many antiquities, found both on and offshore, which are crucial to dating and determining the cultural sequence of the submerged city of Dwarka, is a late Indus-type small rectangular seal made of conch shell with a perforated button at the back. A composite animal motif representing the short-horned bull, unicorn and goat is engraved on it in an anti-clockwise direction. Although the motif is undoubtedly of Indus origin, the art style reflects considerable Bahrainian influence which is apparent from the exaggerated eyes and body outline.

The survival of this seal in Bet Dwarka lends credence to the reference made in the *Harivamsa* about a rule in existence, that every person living in Dwarka should carry a *mudra* (seal) as a mark of identification. This was part of the measures taken to defend Dwarka after Salva's attack on the city. The relevant passage says that it is the duty of the guards to see that every citizen entering into or going out of the city carries a seal. The Bet Dwarka seal may be assigned to the 15th-16th century B.C. in view of the occurrence of chert blades and late Harappan pottery which survived into the post-Harappan times.

Another antiquity of importance is a wide-mouthed jar above whose shoulder are inscribed seven distinct characters. Out of these, six are identical with the late Harappan characters while one resembles the Brahmi sign. And the whole inscription reads: 'Sea (or Sea God) King (or Ruler) protect'. In the *Rigveda* and the *Mahabharata*, there are references to offerings made and prayers offered to the sea god Varuna. From Harappan times onwards down to the medieval period, routine jars bearing inscriptions making a reference to the deity to which the offering is made have been dug out.

Thus, on palaeographical grounds and on the basis of ceramic evidence, the votive vessel of Bet Dwarka belongs to the Late Harappan or Post-Harappan period. Taking into account the fact that the Lustrous Red Ware and Chalcolithic black-and-red ware were in use in Bet Dwarka, the inscription under reference is assignable to the 14th-15th century B.C. Other antiquities include stone anchors weighing between 75 and 250 kg. and parallel-sided and serrated-edged blades of chert from Bet Dwarka and Dwarka respectively, Olpin (narrow-mouthed bottle of pottery) with a loop handle, a mould of calcareous sandstone with three grooves for casting pointed spear-heads of different sizes, shell bangles, gamesmen and beads and Post-Harappan Lustrous Red Ware.

Dwarka did not die a natural death by a process of withering away. There, the laws of time, of becoming and of fading lost their validity because of the city's somewhat sudden demise. Hence, to trace and determine archaeological evidence of our unknown buried past here is a difficult proposition. Nevertheless, it can safely be concluded that the various finds on sea and land date back to the Dwarka mentioned in the *Mahabharata*. But the same

discoveries cannot serve as a basis for establishing Dwarka's links with Krishna. One day perhaps, proof of this nature might come to light. Till then, however, the mystery of the Swarna Nagari or golden city will continue to haunt us as myth battles with reality for acceptance.

It should, however, be noted that identification of the remains located under the waters of the sea as those of ancient Dwarka, the fabled city associated with Lord Krishna, has not been accepted by many archaeologists and there is also a controversy about the date of the structures.

Daimabad

Situated on the left bank of the Pravara near Shrirampur in District Ahmednagar of Maharashtra, Daimabad had attracted the notice of scholars through the find of the cache of bronzes. Consequently, large-scale excavation was taken up at the site under the direction of M.N. Deshpande and S.A. Sali with four main objectives: (i) to confirm the cultural sequence established in earlier excavations; (ii) to ascertain the chrono-cultural context of the bronze figures; (iii) to find out the spread of the settlement of each phase; and (iv) to expose fully the plan of the houses in the earlier levels of the Jorwe phase.

The most significant aspect of the results of the excavation, however, is the extension of the so called late Harappan culture hinterland in Maharashtra in the Godavari basin, showing a different ecological setting from the other known sites of the Harappan culture.

The excavation confirmed the earlier sequence of five cultural phases, each distinguished from the other by the occurrence of a distinctive painted pottery and other objects.

Phase I is characterized by the use of painted pottery called Savalda Ware. Other finds from this Phase include blades and cores of chalcedony; fragment of a copper bangle; tanged arrow head made of a rib-bone; and beads of carnelian and trap. Charred grains of *jowar*, barley and lentil indicate the use of these cereals during that Phase. The architectural evidence is indicated by the remains of five houses made of mud walls with rounded ends. Each house had a hearth, round or oval in shape.

Phase II is characterized by the occurrence of the sturdy late Harappan wheel-made red ware, showing painted designs like cross-hatched triangles, groups of vertical and wavy lines between horizontal bands, chain pattern, interlaced loops, and plant-like motifs. The commonest shapes include vases with collared rim, dishes-on-stand, bowls, etc. A significant evidence was the finds of a rim fragment of a vase incised with three letters of the Indus script, a button seal with a single Indus letter of the script and a sherd bearing a painted Indus letter.

Other noteworthy finds consist of charred grains of barley, a fragment of a copper or bronze celt, a bead of gold leaf, a fragment of a scale and blades.

The structural evidence was represented by remains of a house built of mud-walls as well as hearths.

The burial practice during this Phase was indicated by the find of an extended burial in a grave made of mud-bricks.

On the basis of stratigraphical correlation, the four bronzes (elephant, rhinoceros, a buffalo, and a chariot yoked by a pair of bulls driven by a man) found earlier may have belonged to this Phase. The evidence suggests that these were objects of worship.

Prof. M.K. Dhavalikar writes, 'The most remarkable specimen in the hoard is the bull-chariot. Its total length is 45 cm. and the height 16 cm. It

consists of an elaborate chariot, yoked with a pair of bulls, driven by a man standing in it. The axle is fixed to two solid wheels in such a way that it moves along with them. This mechanism marks an early stage in the evolution of the wheel and the same is the case with the village carts in modern Sind.

'The chariot has a front guard which rises on a platform. The platform has on either side a pair of birds formed into one by the bodies merging, but their heads being in opposite directions. The curved yoking pole is inordinately long and is similar to that of early Sumerian chariots. And, even in the case of bullock-carts in Sind today, the yoking pole is considerably long.

'The pair of bulls yoked to the chariots are extremely interesting, for their hind part looks more like that of a horse. The projecting horns are supposed to be a characteristic of bulls in some parts of Sind and clay figurines of similar bulls have been reported from Chanhudaro in Sind, a Harappan settlement.

'The man driving the chariot is seen standing on the platform. His left hand rests over the guard of the chariot and in the right hand is a stick. His broad, snubbed nose with wide nostrils and protruding jaw with thick lips suggests that he is probably a Proto-Austroloid.

'Stylistically he strongly resembles a terracotta head discovered at Kalibangan, a centre of the Indus civilization in Rajasthan. His hair is gathered in an elongated roll at the back. His body is neither muscular nor proportionate, the chest and the belly are somewhat elongated and the hips appear rather Steatopygous. This latter feature is a physical trait also noticed on a jar from Daimabad itself which can be dated to about 1600 B.C.

'The chariot rider does not appear to be wearing any garment, but the vertical projection on the abdomen, looking like a hooded cobra, may have been part of the lower garment. It is broken at the end. However, it is difficult to identify this object with any certainty.'

Of the three animals, the elephant (height 25 cm.) is the biggest but unfortunately its wheels at the base are missing. The beast is seen standing on a platform of 27 cm. × 14 cm. and having four ring loops for wheels. The figure is solid and obviously cast from a mould which is also the case with the other animals.

The rhino (height 18 cm.) also has wheels at the base. Its mouth is elongated and resembles the snout of a boar. It has a short horn on the tip of the mouth and the folds of hide on its body are schematically indicated. The presence of a rhino in the hoard is extremely significant because the animal was rarely represented in early Indian art save Harappan. Hence its inclusion in the hoard is a token of its Harappan origin.

The buffalo is modelled in a naturalistic manner. It stands on a wheeled platform. It almost looks like a bison but the transverse ribbings on its horn show that it is a water buffalo.

The bronzes are undoubtedly the handiwork of skilled artists and are probably the finest of their kind in the entire range of the prehistoric art of India. But since they have not been recovered from closely sealed deposits of a controlled dig, their antiquity may be questioned.

We have seen that some of the objects, especially the chariot, have many elements in common with objects from Indus sites. But more convincing evidence is furnished by the technology of the bronzes. The analysis of their elemental composition through atomic absorption spectro-photometry has revealed that the metal is arsenic bronze. It is necessary to note in this connection that, of all the Harappan centres, the bronze artefacts from the city of Harappa have a considerable proportion of arsenic.

It has been observed by H.N. Coghlan, — an authority on ancient metallurgy, that "the hardness of most of the copper objects found at Harappa has been shown on analysis to be due to high arsenic content. The presence of this arsenic is believed to be accidental being indigenous to the copper deposits from which the ores were extracted rather than secondarily introduced."

But, as Professor Lamberg-Karlovsky of Harvard argues, "We must not disregard the possibility, however, that the smiths recognised the advantages of an ore with arsenic in it for producing a harder, less brittle tool." In the light of evidence of Harappan artefacts it is highly likely that the Daimabad bronzes may originally have been Harappan, that is, from Harappa proper, and that they were probably imported into the Deccan.

Last but not least important is the function of the bronzes. All the objects in the hoard are big and heavy and cannot therefore be classed as toys. Secondly, copper was an extremely scarce commodity in the Deccan. The bronzes may, therefore, in all probability have been ordered to be made by the ruling chief priest of Daimabad and the entire community might have contributed towards its cost. This was possible only if the bronzes were required for religious purposes in the community.

We have seen that they have all been provided with wheels although those of the elephant have been lost. Since all the objects are movable, it is not unlikely that they were meant to be taken in procession. Such a procession of animals is to be seen on a seal from Mohen-jo-daro on which four animals — an elephant, a rhino, a tiger and one other unidentifiable animal — are seen in a file facing right. The famous Pasupati seal from Mohen-jo-daro also depicts an elephant, a rhino, a buffalo and a tiger. It will therefore be clear that these animals played an important role in the religious life of the Harappans.

We can reasonably conclude that the bronzes in the hoard belong to the late Harappan occupation (*c.* 1800-1600B.C.) at Daimabad and that they were probably imported from Harappa or that some artist from Harappa made them locally at Daimabad.

Phase III is demarcated from the earlier Phase by a barren deposit of weathered light brown soil. The occupation of this Phase is marked by the occurrence of buff and cream ware of medium to coarse fabric, white-painted grey ware, akin to white-painted black-and-grey ware found in Period I at Prakash.

Other important finds of this period are beads recovered from two small bowls, charred remains of barley, pea, horse gram, lentil, *mung/urad*, Indian jujube (*Ber*).

Phase IV is characterized by typical black-painted Malwa Ware. Among other notable finds from this Phase, mention may be made of: terracotta humped bull; two fragments of terracotta rings and perhaps a scale with engraved graduations; a perforated terracotta cake; an almond-shaped object of copper; spear-head of copper with a tang and a medial rib; beads of carnelian; bone points; charred seeds of *ber*; charred grains of wheat, barley, common pea, grass pea, horse gram and hyacinth bean. People buried their dead either in double urns laid horizontally or in single urns.

Phase V was found overlapped with the preceding Phase and belongs to Jorwe culture. The dominant ceramic industry is the Jorwe Ware with its distinctive forms and painted designs. A couple of new types such as beakers with a rounded base having incurved sides were also recorded.

Other finds include copper bangles, polished axes, beads of gold, carnelian, agate and bone, sling balls, saddle-querns, spindle whorls and a toy-

cart wheel, made of a potsherd with a representation of four-spokes engraved on it.

This Phase is marked by five structural phases represented by rectangular mud-walled houses. The walls were found coated with plaster. The floors were also plastered with mud.

Bhagwanpura

The Painted Grey Ware Culture, supposed to have been associated with the eastward movement of the Aryans in India, was found interlocked with the last phase of the Late Harappan Culture at Bhagwanpura in Kurukshetra District of Haryana. Situated on the banks of the river Saraswati, the site was excavated by the Archaeological Survey of India under the direction of Jagat Pati Joshi during 1975-76.

Such evidence of overlap, noticed clearly for the first time, is of considerable significance, so far as the reconstruction of a continuous history of the Kurukshetra region from the middle of the second to the first few centuries of the first millennium B.C. is concerned. That there was a fusion of two cultures here is evident from the continuity of pottery types, painted designs and the art of terracotta figurines. Either of the cultures, however, did not yield any iron object.

It was the Late Harappans who first established their settlement over the alluvial deposit of the Saraswati. As a protective measure against floods, they raised two solid mud-platforms in two successive phases. Yet the site was damaged twice by floods, the last one taking place when the people using Painted Grey Ware had been living alongside the Late Harappans.

The excavations at Bhagwanpura have revealed for the first time some important evidence on the house-types and the burial customs of the Painted Grey Ware Culture. At first, the people were living in round or semi-circular huts, one such hut yielding four saddle querns and pestles of different types. In the next stage, the houses were built of mud walls. A complete house-complex, consisting of thirteen rooms, with a courtyard on the eastern side, was unearthed. The rooms varied from 1.60×1.60 m. to 3.35×4.20 m. in size. The finds obtained from the house included animal bones, dishes and bowls of Painted Grey Ware, terracotta beads, bone stylii and copper objects, besides a small percentage of Late Harappan pottery. The third structural phase was associated with houses built of baked bricks of three different sizes. Two oval structures of burnt earth, probably of a religious character, also came from this phase.

Two graves, one for an adult and the other for a child, were located in the habitation area itself. Both the skeletons, laid in north-south orientation, with head to the north, had no grave-goods, unlike the Harappan tradition.

Sanghol

At Sanghol, ancient Sanghpura, locally known as Uchapind, Tehsil Samrala, District Ludhiana, Punjab, situated 40 km. west of Chandigarh, on the ancient highway (*Sarthavaha patha*) leading to Madhyadesa, a great Buddhist stupa like the ones at Taxila and Nagarjunakonda has recently been brought to light. Though the site came to notice in 1934-35, a regular expedition could be organized only in 1968 by S.S. Talwar and R.S. Bisht. A very important discovery was made here in February, 1985, by the Department of Archaeology, Government of Punjab, with the excavation of Kushan sculptures by G.B. Sharma. This was the first time that Kushan sculptures of

the Mathura school of Indian art were found in such a large number and of such artistic excellence outside the Mathura region.

In the recent past, substantial work has been done in India, as a result of which many stupas have been excavated. Foremost among these is the stupa at Piprahwa in District Basti (U.P.). The stupa at Pauni, District Bhandara (Maharashtra) was excavated and a number of sculptured slabs bearing inscriptions were discovered. Another notable excavation was at Devnimori, bringing to light a relic casket containing corporeal relics of the Buddha. The stupa at Sravasti was excavated by Dr. A.S. Altekar who had claimed that he had uncovered the corporeal relics of the Buddha. At Kausambi, a monastery visited by the Buddha and containing the remains of a stupa was excavated. A stupa was brought to light at Pangoraria, District Sehore (Madhya Pradesh), in the close precincts of the cave containing Asokan inscription. At Nagarjunakonda in Andhra Pradesh, a number of stupas had been brought to light. The work at Sanghol which had been continuing since 1968 has been completed.

The area of the pre-Partition Punjab has been famous for its achievements in the field of agriculture and it is surplus agricultural produce which gave rise to culture since the days of Harappan culture or even earlier. Sanghol was also occupied for the first time by the people of the Harappan culture around 2000 B.C. They were followed by the people using Painted Grey Ware in the first half of the first millennium B.C. The next habitation at the site was that of the people using Black Slipped Ware who are bracketed at the site between *circa* 700 B.C. and 200 B.C. In the first century A.D., during the period of Indo-Parthian king Gondopharnese, Sanghol was probably an important outpost of the kingdom. During the Kushan period (1st to 3rd century A.D.), it was a most prosperous town. It was enlarged enormously and made a great centre of trade and traffic as well as religion and art. In the Gupta times (4th and 5th centuries A.D.), it was definitely the seat of a Governor or a feudatory king. The city was reduced by the vigorous attacks of the Hunas in the fifth century A.D. When the celebrated Chinese pilgrim, Yuwan Chwang, came here between 629-641 A.D., the city was already languishing. A few coins of Balban were also discovered from the site which indicates that the site remained occupied till the early medieval times. The site was reoccupied during the period of Jahangir.

Sharma records: 'The most important monument of the Kushan period excavated at Sanghol is a cylindrical stupa of 16m. diameter built over a raised platform. The monument is in ruins, only some basal courses of the brick masonry have been found preserved. The architectural plan of the stupa is like the *dharmacakra* or spoked wheel. It had three concentric rings of brick masonry with intervening spaces divided by radiating spokes of similar brick masonry at regular intervals. The brick sizes normally are 33×22×8 cm. and 30×20×6 cm. The stupa lies at a distance of 60 m. from the mud fortification which had surrounded the township. The core of the stupa consists of a thick circular wall of brick masonry filled with earth. Within the core was deposited a static relic casket whose remains have been found at two different places in the dig which established the fact that the stupa was completely ransacked at some point of time. This is also borne out by the fact that the entire superstructure was also razed to the ground and what remains of this one time great monument is a handful of antiquities, some masonry walls and 117 examples of stone sculptures. The intervening space was neatly divided by 12 brick masonry walls radiating in all directions at regular intervals. These somewhat triangular spaces were eventually filled with earth and brickbats to form a solid structure. It is further surrounded by a circular wall at a distance of 1.5 m. from

the outer surface of the wall of the core. From this wall 24 spokes radiated and they all met the third concentric wall in the same fashion. From this wall again similar spokes radiated, this time 32 in number, and met the outermost concentric wall. The entire core and superstructure of the stupa was raised on this ground plan.'

'There is a 17m. square platform for the *pradaksina* or circumambulation of the stupa raised at a height. It surrounded the stupa. The platform was neatly plastered with chunam from outside. In order to reach the platform, series of steps on cardinal axes were provided from outside. There is also a surkhi or murram pathway about 5.34m. in width, all around the stupa complex, i.e., surrounding the platform at the ground level. In the east, however, there is a paved path along which a number of votive stupas of solid mud core were erected by the lay worshippers to earn piety.' The Dharmarajika stupa at Taxila and the stupas at Nagarjunakonda had also been planned in a similar fashion. The Archaeological Survey of India also joined the excavations in 1986 with an overall control of the work.

Of the 117 sculptures and architectural members discovered at the site, there are 4 corner pillars, 65 uprights, 35 cross-bars and 13 coping stones. The celestial females of unimpeachable beauty called Yakshis were the centre of attraction in the representational art of Sanghol. The *salabhanjikas* (or the damsels pulling the golden bough of heavenly trees on the earth) and the Asoka *dohada* (or the virgin damsels kicking gently with the sole of their lotus-feet the delicate trunks of the Asoka trees) were the two major forms in which they appear on a series of uprights of the stupa railings at Sanghol.

Salabhanjika in fact arose out of the Yakshi concept and Yakshi was a folk deity. The earliest depictions of Yakshis occur in the second century B.C. on the railing pillars running around the stupa at Bharhut. Later, they appear on the gateway of Sanchi in the first century A.D. The period of their flowering, however, was the Kushan period (1st-3rd century A.D.) at Mathura. The art of Sanghol is mainly the art of *salabhanjikas*. The artists of these sculptures exploited the basic themes of *salabhanjikas* and *dohada* in a variety of manner and thus we have the scenes of lady holding mirror, sword-wielding amazons, Sri Lakshmi, the goddess of prosperity, touching her breast to pour the life-giving milk to mankind, mother fondling and carrying her child, lady taking bath under spring, damsel drying her hair after bath, heavenly damsels gracefully standing in repose, lady busy in adorning herself with jewellery, lady drinking wine, lady playing and/or carrying musical instruments, acrobatic dancer, lady with her spouse, etc.

Radha Banerjee, daughter of Dr. P. Banerjee, has identified for the first time (*Roopa-Lekha*, Vol. LIX, April 1987 pages 91-92) a sculpture from Sanghol which is highly realistic showing also the wit and humour on the part of the artist. The subject depicted is the love of a young woman and an aged man — an instance of the well-known proverb that love is blind.

The sculpture shows an old man with a broad back carrying a tall, young woman along a forest path indicated by the presence of a tree. The lady is decorated with various ornaments such as ear-rings, necklace, girdles, armlets and anklets. There is also an ornament on her forehead. Her hair is well combed and formed into a braid. The lady is well dressed. She is not only clad in a *dhoti* but also in a jacket with designs. The stout old man has a bald head with sparse hair on the sides and his face is wrinkled. He, however, is enjoying carrying her. The artist has here depicted reality and also created humour by showing the mutual warmth between the young lady and the old man, as he

was proceeding along with her on the forest path. The old man is clad in *dhoti,* reaching up to the knees, the end of which (*kachchha*) is tucked into the girdle. His torso is bare. The path along which the old man is passing slopes downward, indicating that the man is perhaps going towards a stream.

Radha Banerjee writes: 'The details of the sculpture correspond closely to one of the tales of the *Mahaummagga Jataka* which bring out the extraordinary intelligence and presence of mind of the Bodhisattva in one of his births as Mahausadha. The portion of the above Jataka as relevant for our purpose is as follows:

'During the time when the Bodhisattva was born as Mahausadha, there was a person called Golakala, who was black and dwarfish or short-sized. His wife was called Dirghatala, i.e., a lady, tall in size. Once Golakala told his wife to prepare some cakes because he wanted to meet his parents. Dirghatala at first refused to oblige her husband saying that it was no use seeing the parents. After persistent entreaty by Golakala, she prepared some cakes. Thereafter, Golakala and his wife carried some food and presents and started on their journey and in the course of time, they reached the bank of a stream, which was not very deep but they were afraid of the rushing water and did not dare to cross it. While they stood on the bank they saw a man in a miserable state, Dirghaprishtha by name (whose back was very broad), passing by that side. Golakala and his wife wanted to know from him whether the river was deep or shallow. Understanding their fear of water, Dirghaprishtha told them that the river was very deep with many kinds of voracious fish in it. Then, Golakala asked him to tell them how to cross the river. In reply, he told them that he had struck up a friendship with the crocodiles and monsters inhabiting this river and they would not be able to harm him. Thus assured, Golakala requested him to help them cross the river. Dirghaprishtha readily agreed to do so. The couple were pleased with him and gave him food to eat. Having finished his meal, he asked who was to be carried first. Golakala asked him to take his wife first. So requested, Dirghaprishtha placed the wife on his back and went down to the river. When Dirghapristha had gone a little, he crouched down and waded along in a bent posture to give the impression that the water was very deep and he was to proceed very cautiously. When Dirghaprishtha reached the middle of the stream, he proposed his love to Dirghatala and offered to marry her. Dirghatala also fell in love with Dirghaprishtha and readily agreed to his proposal. Thus conversing in a happy mood they reached the other side of the river and began to amuse themselves which aroused jealousy in the mind of Golakala. In excitement, he jumped into the river and crossed it easily as it was in reality very shallow. Golakala caught hold of Dirghaprishtha and brought him and his own wife to Mahausadha who was known for his justice. When Mahausadha cross-examined Dirghaprishtha, he could not get satisfactory answers to his questions.

'The guilt of Dirghaprishtha was easily established and Mahausadha handed over Dirghatala to her real husband, Golakala. The panel presents only the first part of the story, i.e., Dirghaprishtha carrying Dirghatala and going down to the river. The physical features of Dirghaprishtha and his crouching movement answer to the description given of him in the *Mahaummagga Jataka.*

'The details of the sculpture taken together leave no doubt that here the artist has depicted a part of the *Mahaummagga Jataka.*

'The sculpture in question is the first and only representation of the above story, so far known. It adds to the list of Jataka representations in Indian art.'

The anonymous artist had, according to Dr. S.P Gupta, 'completely freed

himself from all kinds of restrictions — religious and iconographic as well as moral and social. He had absolutely no inhibitions. He did what he liked and what in fact pleased him. He provided her with a *dhoti* but only diaphanous. He covered her nudity with the heavy folds of the *dhoti* and also made her nude even when he made her wear a *dhoti*. He chiselled the thighs delicately and broadened the pelvic region to make her highly voluptuous. He modelled the breast full, round and bulging and made them highly voluptuous. He gave three or more gentle bends to the body and produced languorous feeling. He made the body comparatively slender as a very skilled step towards achieving weightlessness in body. He made the limbs proportionate and balanced with a slight bend at one of the knees to create perfect ease in the body.'

The couples, the royal devotees and the lay disciples came to Sanghpura (or Sanghol) and looked at these sculptures without any feeling of shame or guilt because these represented the beliefs or superstitions of the period and the ultimate aim of the visitors was to pay homage to Lord Buddha. It should be borne in mind that nudity in India, as in many other parts of the world, is always connected with fertility and rain-magic. It is this association with fertility which makes it auspicious, hence its occurrence in a religious establishment.

A question on which the debate continues is as to why the architectural pieces and sculptures were found in one pit, systematically stored. Some scholars think that it was to save these from the invaders that these were hidden in this fashion. That it can be the invaders in the first century A.D. has to be made clear. However, the better proposition is to hold the view that these were stored in one place before these were actually set up.

M.C. Joshi writes in *Archaeology and History*, Vol. II (Eds. B.M. Pande and B.D. Chattopadhyaya, Delhi, 1987, page 502): 'Although it has been stated that the railing pillars, cross-bars and coping stones of Mathura origin at Sanghol were filed and carefully concealed in a pit for safety on account of Huna invasion in the fifth century A.D., one finds it difficult to believe this, for there is no evidence at the site like the sockets, postholes or even pits to show that these were ever fixed around the *stupa*. Secondly, the number and proportion of the posts also suggest that these were intended to be used in a *stupa* of smaller size. If Sanghol is supposed to be identical with Hieun Tsang's She-to-tu-lu where he says that the then monasteries were desolate, it is striking to note that he does not refer to the destruction of the establishment or town by the Hunas in the past. This *stupa* complex seems to have been built in two stages.' A.S. Bisht, however, writes in his paper 'Technical Study and conservation of sculptures from Sanghol' (*Kushana Sculptures from Sanghol*, Ed. Dr. S.P. Gupta, New Delhi, 1985, page 52): '.....on close examination, it has been confirmed that these sculptures were buried only after being used as members of a railing for some centuries. This is clear from the exfoliated facade of a sculpture which has calcareous deposits on the top of the damaged/missing portions also.'

Other Proto-historic Cultures

Ahar

Ahar, where a rich proto-historic culture had flourished, is situated near Udaipur in Rajasthan. Its ancient name was Aghata. Gilund is 72 km. north-east of Ahar.

At Ahar, on the bank of a river of the same name, the 13m.-thick accumulations of habitation fall into two periods: proto-historic and early historic, with a long gap between them. The characteristic ceramic of the proto-historic period, divisible into three *Phases*, *A*, *B* and *C*, is a black-and-red ware, painted in white with dots, lines or circles. A bowl with incurved or straight sides, a shallow dish-on-stand and a globular jar with a high and narrow neck constitute the main types in this pottery; the storage-jar and the cooking-vessel are red or black and decorated with incised or applied designs. The distinctive feature of Phase A is the occurrence of pots in cream-slipped and buff wares, absent from the later phases. Similarly, the additional occurrence of black-on-red, blotchy grey and lustrous red wares characterizes Phase C. The houses were built of mud-bricks, their walls resting on stone rubble, either in foundation or on plinth-base. Copper was the metal in use. A few microliths were also found, but it is almost certain that they did not form part of the proto-historic cultural equipment. There are beads of terracotta and semi-precious stones, the former more plentiful. The animal terracottas comprise the bull, ram, elephant, dog and rhinoceros, while the human figurines have a pinched nose. There are large hearths, with two or four cooking-positions. Animal bones point to a diet that included meat, while querns and rubbers were used for pounding grains.

The proto-historic period of Ahar, according to Carbon-14 determinations, may have lasted from 1800 to 1300 B.C.

Gilund confirms the picture obtained from Ahar, though there were some minor variations at the former site. Gilund appears to have had an earlier beginning, particularly because unlike Ahar, microliths are here an essential equipment of the proto-historic cultures, as in Central India.

Dr. Y.D. Sharma writes in *Ancient Remains, Monuments and Museums, Part I* (New Delhi, 1964, page 19): 'The antecedents of this proto-historic culture of south-east Rajasthan remain unresolved and call for further investigation. Certain correspondences are no doubt noticed between the pottery from Ahar and Navdatoli, while both may have analogues in pottery from sites in Iran. For instance, the goblet on a hollow tall stand and a bottle-like vessel occur at Tepe Hissar, while the double bowl-like jar is found at Shah Tepe. Some contact may, therefore, be certainly indicated. But if we are to imagine that south-eastern Rajasthan or Central India was colonized by people from Iran, much firmer evidence would have to be looked for.'

Nevasa

Nevasa lies on the northern bank of the Pravara, a tributary of the Godavari, in Ahmadnagar District of Maharashtra. It has yielded fuller details of the sequence of cultures in the Godavari Valley.

Excavation of the site was started in 1954 and carried on in subsequent years by Dr. H.D. Sankalia of the Deccan College Post-graduate and Research Institute, Pune.

Nevasa provides a fuller index of the cultural sequence on the Godavari than Nasik, in the sense that relics of the Old and Middle Stone Ages are better represented here. Including the two Stone Ages, the occupation here is divided into six periods, the latter four of which are roughly coeval with the four periods of Nasik. The excavation at Nevasa was carried out on a larger scale and the site has produced ample evidence for each period.

Period III, proto-historic, came to an end in about the thirteenth century B.C. Nevasa was occupied again after a long gap in about 200 B.C. in the

historical period (Period IV). A black-and-red ware, and the so-called Andhra ware, with criss-cross designs, were now in use. Vessels of the Northern Black Polished Ware were also finding their way now to this place. Iron was the main metal and the currency included the coins issued by the Satavahana rulers (324 B.C. to 227 A.D.). A punch-marked coin has also been recovered from the levels of this period. Beads, crucibles and animal figurines were in use.

The pottery is well-burnt with a red matt surface, often painted in black. Some of the pottery shows a thick orange-to-red slip, as in the Malwa Ware. The major types, including a spouted jar, resemble those at Jorwe. There is also evidence of a grey ware, sometimes painted in red, and a black-and-red ware.

As on the Tapi, the dead were buried in urns, if children, and in pits, if adults. The houses were built with grass-mixed clay and strengthened with reed; their floors were rammed with clay or lime, and the roofs laid possibly with reeds or bamboos covered with clay. Some clay-lined oval or oblong pits, found usually filled with ash, may have served a ritualistic purpose. There also existed unlined pits with post-holes on the periphery.

Dr. Y.D. Sharma writes in *Archaeological Remains, Monuments and Museums Part I* (New Delhi, 1964, page 76): 'Pebbles and clay, or alternating courses of black clay and silt, were now used in the foundations of houses, which were largely built with kiln-burnt bricks. The floors were of lime and clay, mixed with hemp. Wooden posts, however, still supported some of the roofs, as in proto-historic times. Soak-pits lined with bricks or rings and storage-jars embedded in floors formed other adjuncts of houses.

'The introduction of the Red Polished Ware and Roman amphorae in about 50 B.C. heralded the beginning of the next period (Period V). Life became more affluent, but there was no vital change in the pattern of life or the articles of daily use. Glass may have been known in proto-historic times, but it became now more accessible. Faience and shell, apart from semi-precious stones and terracotta, are among other materials used for manufacture of beads. Votive tanks, human figurines and a wide range in iron implements supplied other needs. The houses were built on the same pattern as in the preceding period, but tiles were used for roofing.

The site was deserted in about 300 A.D. and it was after a long gap, in about 1400, that it was inhabited once again during the rule of the provincial governors appointed by the Sultans of Delhi (Period VI). The Mughals and Marathas ruled over it successively till about 1700 A.D. The houses were now often made of stone. The celadon, glazed ware and glass, the last of which was perhaps the most popular material for bangles, are characteristic of this period. These levels also yielded coins of the Bahamani and Nizam Shahi rulers.

Among three samples from the top levels of the proto-historic period at Nevasa, two have been dated by Carbon-14 to *circa* thirteenth century B.C.

Maheswar and Navdatoli

Maheswar and Navdatoli, which have yielded the story of human habitation on the Narmada, from pre-historic to late medieval times, with certain gaps, are situated in West Nimar District of Madhya Pradesh facing each other, respectively, on the southern and northern banks of the Narmada. A visit to the Sahasradhara, which is not far from these places, by boat is a pleasant experience.

Maheswar is traditionally identified with Mahishmati — a city founded by

king Muchukunda according to the *Puranas* and other works and once the capital of Avanti according to Buddhist texts — to be distinguished, no doubt, from the northern capitals at Vidisa and Ujjayini in different periods.

Maheswar and Navdatoli were excavated in 1952-53 and 1957-59 under the direction of Dr. H.D. Sankalia. Navdatoli, which is about 96 km. south of Indore, was dug extensively and it gives a fairly good picture of the chalcolithic cultures of central India.

Of the seven periods into which the occupation of Maheswar and Navdatoli is divided, the first two belong to the Early and Middle Stone Ages, and the third to the proto-historic period. The remains of Periods III and IV are found both at Navdatoli and Maheswar, but the subsequent story from Periods V to VII is gleaned only from Maheswar.

Period III of Navdatoli appears to have been an age of populous habitation. Its houses — square, oblong, or round on plan — with passages between them, were built with bamboo-matting and posts, plastered with mud and whitewashed with lime. Perhaps the roofs were also built with bamboos and reeds laid over with mud.

Dr. H.D. Sankalia writes in *Indian Archaeology Today* (Bombay, 1962, pages 85-88): 'The Navdatolians had a large number of pottery vessels which according to their fabric, shapes and designs fall into four distinctive groups, each having certain shapes and designs associated with a particular period. The most common is a pale red slipped fabric with paintings in black over it. Since this occurs throughout Malwa (an old geographical name for parts of central India), it is called the Malwa Ware. This occurs as a major pottery fabric right from the first occupation and runs through the entire chalcolithic habitation. However, in the earliest period only certain shapes and designs figure, both becoming more varied later.

'Then there is a sprinkling of black-and-red ware, with paintings in white, comprising generally bowls (with gracefully inturned sides) and cups. This fabric is confined only to Period I and seems definitely to be an import from the adjoining region of Rajputana, where at Ahar it occurs in profusion.

'The third important fabric is the white-slipped one. It is associated with the first two periods only, but died out later. It has several gradations in slip and texture, but the finest is smooth, lustrous and slightly greenish-white.

'Though it copies some of the shapes of the Malwa Ware, its own distinctive shapes are a shallow dish with broad, flat rim and stand, and a high concave-walled up with bulging bottom. An almost complete bowl of the latter in fine white slip recalls a similar vessel from the earliest period at Sialk, in Iran. A band of running antelopes and dancing human figures seem to be characteristic designs in this fabric.

'In Period III occurs, for the first time, a new fabric called "Jorwe" after the "type site" in the Deccan. This has a well-baked core with a metallic ring and a matt red surface. Comparatively limited numbers of shapes and designs figure in this ware. It is also at this time that the most distinctive form of a vessel occurs. This is the channel-spouted or teapot-like bowl. It is in Malwa fabric. In 1958-59 we were lucky in getting a complete bowl, which leaves no doubt about its shape and function. It seems to have been a vessel with which ablutions were performed, Since it is without a handle, it has got to be held in the palms of both the hands, and the contents (liquid) poured slowly, as in a sacrifice or some such ritual. In order to control the flow of the liquid, a hole was sometimes made at the junction of the spout and the body of the vessel. A

similar contrivance may be noticed in the channel-shaped bowls from Western Asia.

'Besides this important change in pottery, there was another very significant change in the life of the people. For the first couple of hundred years, the inhabitants principally ate wheat. But now other grains, rice, lentil (*masur*) (Lens culinaris Medikus), *mung* or green gram (Phaseolus radiatus L.), peas, vatana or *muttar* (Lathyrus sativus L.) and *Khesari* (Lathyrus sp.) formed the regular diet of the people. These are the grains which are grown and eaten in the Nimad District today. Our discovery, the first of its kind in India, shows that the food habits of a section of the people of Madhya Pradesh are at least 3,000 years old. Though wheat was known before from Mohen-jo-daro, these are the earliest examples of rice, gram, *masur, mung, kulthi,* beans and linseed. And though we do not know how these grains were cultivated, for no ploughs have been found, a number of heavy stone rings, which have been discovered, might have been used as weights for digging sticks, as is still done by some primitive people in Orissa. Still it is obvious that a people who ate so many types of grains and had such a variety of pots and pans, indicating varied needs and uses, were not so primitive as some tribes today.'

The early inhabitants of Navdatoli were fairly well off. According to Carbon-14 dates, the earliest farmers in Madhya Pradesh lived about 2,000 B.C. They continued to live on, despite three major destructions by fire, at least up to 700 B.C. when an iron-using people from Ujjain and possibly further North wiped out their existence and laid the foundations of a new economy in which iron, minted money, houses of bricks and altogether a new pottery played a dominant part.

Dr. Y.D. Sharma writes in *Archaeological Remains, Monuments and Museums, Part I* (New Delhi, 1964, pages 72-73): 'The proto-historic occupation at Maheswar and Navdatoli ended in about the fourteenth century B.C., and it was after a long gap that the sites were re-occupied again in Period IV, which is characterized mainly by the black-and-red ware and the N.B.P. Ware and early coins. It may be dated from *circa* 400 to 100 B.C. By now iron had come into use. Terracotta figures, toys, bangles and beads, the last also of semi-precious stones and glass, formed other material in use. A *stupa* at Navdatoli, with some of its bricks inscribed in letters of the third century B.C., falls in this period; it was destroyed by a flood. The use of kiln-burnt brick in the *stupa* suggests good housing, but the remains of houses found in the excavations are limited to post-holes, pebble-walls and ring-wells.

'In Period V limited to Maheswar, dated between 100 B.C. to [*sic*] A.D. 100, the black-and-red ware diminishes considerably, while tan and burnished red wares become more popular. A number of glass objects come from this period. The evidence of houses is provided by brick-bats and tiles.

'Period VI is characterized by the Red Polished Ware, which is found largely in western India in association with the remains of the Kshatrapa period. It is closely akin to the Roman Samian Ware, and one of its forms, a long and narrow-necked spouted vase commonly described as "sprinkler", is perhaps of Mediterranean origin. The black-and-red ware shows a further decrease in this period, while coarse red-and-black wares are on the increase. The exposed structures of this period were largely fragmentary but included a house consisting of a large room with verandahs and two small rooms, all built with kiln-burnt bricks raised on pebble and mortar foundations.

'Period VII is dated to late medieval times when this part of the country was under the control of Muslims and Marathas successively.'

Eran

Eran in Sagar District of Madhya Pradesh is the ancient Airakina and it is on the Bina (ancient Venva), a tributary of the Betwa, which ultimately joins the Yamuna. It is 72 km. from Sagar and is well-known for its Gupta remains consisting of temples and inscribed pillars. The thick deposit here is divided into four periods, the lowest of which is proto-historic, and shares all the equipment of the chalcolithic cultures of central India, including the white-painted black-and-red ware. A grey ware with paintings in black or red also occurs. Channel-spouts occur late in the period. Towards the end of the chalcolithic culture, but well within it, the settlement was enclosed by a wide mud rampart and a moat outside it, except on the riverside. The beginnings of proto-historic habitation here could be dated to the seventeenth century B.C. General Cunningham was the first to survey the area in 1874-75 bringing to light the valuable architectural, epigraphic and numismatic evidence from the site. He identified Eran with the old town of Airakina.

The excavation at Eran was started in 1960-61 under the direction of Prof. K.D. Bajpai and Dr. Udai Vir Singh, of the University of Saugar.

The excavation revealed that Eran was occupied again, after a long gap, a few centuries prior to the beginning of the Christian era (Period II). Iron had now come into use and the coarse red ware was the normal pottery, although the plain black-and-red ware still continued. A sherd of the N.B.P. Ware was also found in the upper levels of this period. Beads of terracotta, shell and semi-precious stones, bangles of shell, stone weights, terracotta figurines and punch-marked and cast tribal coins occur in this period. Of particular interest was a lead piece bearing an impression of a die with the legend in Mauryan Brahmi reading as *rano* Idagutasa, 'of king Indragupta'. Brick-bats, found while excavating, attested the prior presence of structures.

During the first four or five centuries of the Christian era (Period III), occupation continued here. The black-and-red ware now completely disappeared and the well-known red polished ware, associated with Roman ceramics, came into use. The houses were built substantially with kiln-burnt bricks. This period was particularly rich in coins, yielding a large hoard of punch-marked coins and coins of Ramagupta, the Nagas and the Indo-Sassanians. Among these, the coins of Ramagupta, both lion and Garuda types, are recorded for the first time. Figurines in Gupta style also occurred in these levels. A seal bearing the figure of Gaja-Lakshmi, with an inscription in Gupta characters which mentions the name of the town as Airakina, was of particular interest.

Period IV is datable to *circa* 1600 to 1800 A.D. The town was now fortified by a long stone-wall. Glass and shell bangles appear to have been a popular industry in this period.

Dr. Udai Vir Singh observes: 'Thus the excavations at Eran have established an almost continuous cultural sequence from the chalcolithic period down to the modern times. The occurrence of Grey Ware may throw valuable new light on the chalcolithic phase which deserves further investigation. One neolithic hand-axe discovered from the surface is unique in the region. The discovery of the inscribed lead-piece from Period II brings to light King Indragupta of the Eastern Malva region, so far unknown from any other source. It can be inferred that after the disruption of the Mauryan Empire after Ashoka, this region became independent and was ruled by a royal line to which belonged Dharmapala and Indragupta. The coins of Ramagupta have further strengthened his historicity. The occurrence of Indo-Sassanian coins confirms

the evidence of Huna occupation of the region already revealed by the dated inscriptions of Toramana.'

Inamgaon

Inamgaon is a chalcolithic site located about 85 km east of Pune on the right bank of the Ghod, a tributary of the Bhima. Work at the site, which was planned by Prof. H.D. Sankalia and conducted by Z.D. Ansari and M.K. Dhavalikar had brought to light valuable evidence in respect of the early farmers of Maharashtra. Since this is the only chalcolithic site in Maharashtra which has been excavated on a sufficiently large scale, it has become possible to study many aspects of the chalcolithic cultures of the Deccan.

According to Prof. Dhavalikar, the occupation of the site is divisible into the following three cultural periods with an appreciable overlap in between:

1. Period I: Malwa Culture (c. 1600-1400 B.C.)
2. Period II: Early Jorwe Culture (c. 1400-1000 B.C.)
3. Period III: Late Jorwe Culture (1000-700 B.C.)

In the course of excavations, over 60 houses of different periods were laid bare. Of these, a majority belong to Period III, whereas a few are of Periods II and I. The houses of Periods II and I were rectangular on plan; they had walls made of split bamboo and were plastered with mud and cowdung. The roof above was probably conical. The house, however, undergoes a drastic change in Period III when small round huts were built. The evidence from the excavations shows that the houses of craftsmen like the potter, the goldsmith, the ivory-carver, etc., were located on the western periphery of the principal area of habitation (Period I). This was the case during all the three periods of occupation. A noteworthy feature of the craftsmen's houses is that most of them had pit silos in them for storing grain, whereas in the houses situated in the central part, the grain was stored in four-legged jars which were supported by four flat stones. In some of the houses were encountered large circular mud platforms. A granary containing a number of pit silos and a round mud platform was also discovered. It was located just by the side of a large house which has been identified as that of the ruling chief of the community. Both the structures belong to Period II.

A very important feature of the settlement is a huge divisionary embankment (240 m. long and 2.25 m. wide) which was constructed during Period II. The wall was built of stone rubble set in mud mortar at the base and its upper part was probably earthen. A channel (4 m. wide and 3.50 m. deep) was dug almost parallel to it. Recent investigations show that this was actually a storage tank dug by the people. The flood-water could be stored in it and it was probably utilised for irrigating fields nearby, the excess water being drained through the stream on the south.

These early farmers of Maharashtra raised a variety of crops like barley, wheat, lentils, peas, *kulith, jowar* and even rice which must have been grown in small, carefully tended plots. The investigations indicate that the chalcolithic farmers may also have cultivated the black cotton soil.

The people used a characteristic black on red painted pottery which is well known to archaeologists as the Jorwe Ware. It is represented by such shapes as the spouted *lota* and a concave-sided carinated bowl. The pottery, which is extremely fine in Period II, becomes coarse in Period III when such forms as the channel-spouted bowl and a convex-side bowl become common. The pottery was baked in a specially built kiln which has been found in the course

of the excavations. It was built on a stone foundation with a fire chamber below; flues were provided at the base for the hot gas. The kiln is datable to Period II.

The people worshipped a mother-goddess which was kept in a clay-box in the house. A goddess without head was also worshipped. She can be identified as the goddess *Visira* of the *Mahabharata*. Male figurines of unbaked clay also occur. They were probably made on special occasions and worshipped.

The people had a strong belief in life after death and hence buried the dead carefully within the house. Children were buried in two grey ware urns placed mouth-to-mouth horizontally inside the pit. In case of adults, the whole body was placed within the pit and the pots containing food and water for the dead were also kept in it.

The settlement was deserted about 700 B.C. for reasons yet unknown to us.

Maski

At Maski, the famous site of an Ashokan rock-edict, in Lingsugur Taluk of Raichur District, Karnataka State, a systematic excavation was carried out by the Archaeological Survey of India with the co-operation of the Hyderabad Department of Archaeology in the months of January-March, 1954. To the north of the village flows the Maski nullah, a tributary of the Tungabhadra.

According to Sir Mortimer Wheeler, 'The excavation of a site, like the ordering of a battle, must be thought out and co-ordinated by a single present and directing mind. Otherwise, chaos, waste, inefficiency are inevitable.' At Maski, such mind was B.K. Thapar.

'To the folk who first settled on the site and made microliths,' observes Thapar in *Ancient India* (No. 13, 1957, p. 10), 'the attractions of the area for the mode of life pursued by them must have been manifold. The condition of the hilly country with a dry soil was ideal for settlement, for water in the form of a river was at hand.

'The discovery of a number of old gold-workings scattered all over the Maski band clearly proves that the country had been systematically mined for gold in ancient days, and as many as thirteen old workings were located near Maski itself. Their occurrence is not without significance, as it affords a clue to the location of Suvarnagiri (in Sanskrit: Suvarna-giri = the gold mound), the headquarters of Ashoka's viceroy in the south.'

Petroglyphs or rock-bruisings of as yet indeterminate age were also observed on the cyclopean boulders at Maski.

A. Ghosh writes in *Ancient India* (No. 13, 1957, p. 1): 'The sequence of cultures revealed at the site is comparable with that occurring at Brahmagiri, situated in the same geographical horizon — a succession of three cultures, chalcolithic, megalithic and early historical, the first and the third closely following their Brahmagiri counterparts. The second culture at the two places differed from each other in some of their [*sic*] tomb-types but did not lack an essential commonness. Parenthetically, the identity of the stratigraphic position of the megalithic culture at both the sites adds strength to the belief that variations in the megalithic tomb-types are merely regional and do not indicate any wide chronological disparity. After Brahmagiri, megalithic monuments have been excavated at many places in the south, and superficial explorations have been no less fruitful. The data obtained at Maski are a welcome addition to our knowledge.'

The excavation was conducted with a view to checking up and further

elaborating the culture-sequence obtained in the excavation at Brahmagiri in 1947. Besides fulfilling the objective of corroborating the Brahmagiri evidence, the excavation at Maski produced much that is new and of interest.

The cultural equipment of the earliest settlers of the first half of the first millennium B.C. was chalcolithic in nature, as evidenced by the occurrence of copper objects along with microliths. The pottery of the period had a thick gritty core and, at times, a pinkish buff slip. The second occupation represented a full-fledged Iron Age megalithic culture (*circa* third to first centuries B.C.), characterized by extended or fractional burials, with grave-furniture consisting of 'black-and-red' pottery, typical of the 'megalithic' period of south India, thus contrasting with the fractional burials in cists or pit-circles at Brahmagiri. The last period of occupation was ascribable to the Andhra age (first-second centuries A.D.), as testified by the occurrence of Satavahana coins and the well-known russet-coloured pottery.

Other types of burials obtaining at Maski in the megalithic age are identified on the surface by menhirs in rows and stone circles with low cairns, one each of which was opened up in 1954. The former did not yield any funerary deposit, but the latter was identical in character with its counterparts at Brahmagiri.

Thapar comments in *Ancient India* (No, 13, 1957, pp. 12-16): 'The cultural equipment of Period I was chalcolithic in nature, as evidenced by the occurrence throughout of microliths along with a meagre supply of copper. The material employed for the manufacture of the microliths, which formed the most distinguishable industry of the Period, included chert, being the normal medium, agate, carnelian and opal.' Iron did not occur in this Period. Among the small finds, beads were outstanding. A pastoral economy of the settlers tending towards food-growing was demonstrated. No definitive evidence of house-plans and building material was revealed. The occurrence of post-holes and rammed earth flooring in various levels of the Period suggests that the structures of the settlers were made of perishable material like timber.

'The outstanding characteristics of Period II were the sudden emergence of the megalith-building people and the introduction of iron. These combined traits provide the label for the Period, viz., the Iron Age megalithic culture. The megalithic people had drifted away from the use of stone for weapons and tools. The notable feature of the culture was, however, the method of burial. No fewer than five classes of burials were encountered during the present excavation.

'Iron, being a necessary adjunct of this culture, was well-represented in both the burials and the contemporary habitational deposits. The objects included lances, tanged arrow-heads, ferrules and dagger-blades. Of copper, only four objects were recovered, suggesting a partial adoption of this metal for daily use. A fragmentary bangle alone is worth mentioning.

'The notable feature of the pottery was the sudden emergence of the megalithic ware with a fabric finer and section thinner than in the preceding Period, polished, occasionally shining, and unmistakably turned on the wheel. In its patent fabric it was black inside and black-and-red outside, the black confined to the upper part of the exterior of the vessel, the result of inverted firing. This pottery, with shapes radically different from those of Period I, also implied a different tradition of kiln-firing and advancement in the method of preparing the paste. On the basis of the technique of manufacture alone, it is tempting to compare and at least to relate genetically this megalithic Black-

and-red Ware with the ware produced by the same technique at the central and western Indian sites with chalcolithic and Iron Age associations, but in the present state of our knowledge, the comparison is not fully valid. The other ceramic industries of the Period were the all-black ware and the red-slipped ware.

'The animal-remains from the Period indicated the domestication of the cattle of the short-horned humpless variety and the sheep. From the number of the bones, however, it is evident that not large stocks were raised. The inhabitants seem to have practised settled agricultural economy with a bias for urban life. Hunting as a part-occupation is suggested by the occurrence of stone balls, presumably used for the same purpose as in the preceding period. Another stone object throwing light on the economy of the people was a stone pestle.

'The distinctive features of Period III included the introduction of coinage and the use of a sophisticated ceramic, the Russet-coated Painted Ware, inaptly labelled hitherto as the Andhra painted ware. The chief attribute of this pottery was the rich repertoire of linear patterns, rectilinear or criss-cross, executed in white with lime or kaolin paste under a russet-coloured ochreous wash which shows crazing due to salt-glazing. External contacts in the Period were indicated by the occasional occurrence of rim-fragments of the "beaked dish", on the base of which the rouletted decoration is normally applied. The site, however, is reported to have also yielded previously sherds actually bearing the rouletted pattern. The other wares current during this Period were: (a) dull red ware of medium fabric, occasionally treated with a red or chocolate slip and (b) darkish grey ware of related fabric . . .'

A small number of animal-remains of buffaloes and sheep were obtained from this Period, but this is not particularly significant, for the entire economy of the communities has changed by this time. A system of government, with coinage and external contacts, must have largely contributed towards such a transition.

The distinguishing ceramic industry of the medieval period was a grey pottery characterized by a burnished surface and a medium, occasionally coarse fabric. The relieving feature of this otherwise monotonous ware was the decoration consisting primarily of multiple grooves bordered by a stamped and incised pattern mostly on the shoulder. Dating evidence was provided by coins belonging to the fourteenth century.

Historical and Medieval Sites

Atranjikhera

The excavation at Atranjikhera, Etah District, Uttar Pradesh, was started in 1962-63 by the Department of History, Aligarh Muslim University, and the work was directed by R.C. Gaur under the general supervision of Prof. S. Nurul Hasan. It brought to light a continuous sequence from the proto-historic to medieval times.

Period I is represented by a 1-m thick deposit, which yielded the ochre-coloured ware. A large number of burnt brick-bats of ochre colour were also found. The strata have also brought to light two ceramic industries — the O.C.P. and dull red ware.

Period II is characterized by the presence of black and red ware, microlithic flakes and cores and a few copper objects. Most of the shapes of

black-and-red ware differ from the shapes yielded by other chalcolithic sites. No paintings have been found on this type of ware.

The other finds of this period comprised carnelian and shell beads, two copper objects, a bone comb, fragment of a pestle and a large number of flakes of chalcedony and agate, etc. The period is dated to the latter half of the second millennium B.C.

The main characteristic feature of Period II is the Painted Grey Ware found in association with the plain grey, black-and-red, black-slipped and red wares. Other objects include iron artefacts, bone styluses, beads and terracotta discs. As far as structural activity in the area is concerned, it is represented by mud floors.

Period IV (*circa* 600-200 B.C.) is characterized by the presence of the Northern Black Polished Ware along with other associated fabrics. Pieces of iron and a large number of animal bones have been recovered from the vicinity of the community hearths. Iron objects, particularly agricultural tools, were found. The structures included a mud-brick wall superimposed over another wall of baked bricks and associated impressive burnt brick floor. The red ware included vase, bowl, basin, dish, miniature bowl (both painted and otherwise) by way of types.

The ceramics of Period V (*circa* 200 B.C.—A.D. 300) comprised a dominant red ware of medium fabric, assignable to the early centuries of the Christian era. The terracotta human and animal figurines, beads, an interesting house-complex of burnt brick and miscellaneous other finds were other notable items of this period.

Period VI (*circa* A.D. 600-1200) followed after a desertion of the site and was characterized by an early medieval fabric showing incised designs and spouts, etc. and crude human and animal figurines.

Period VII (*circa* A.D. 1200-1500), being a continuation of the previous Period, saw the appearance of the glazed ware of the sandy friable fabric showing floral and geometric designs.

Hastinapur

Hastinapur, the legendary capital of the heroes of the *Mahabharata*, is identified with a village and its neighbouring mounds bearing still the same name in Meerut District of Uttar Pradesh. These mounds were situated on a deserted bank of the Ganga and were excavated in 1950-52 by B.B. Lal of the Archaeological Survey of India. They fully corroborated the ceramic sequence of Ahichchhatra, apart from revealing the true stratigraphic position of the Painted Grey Ware.

The occupation of Hastinapur is divided into five periods. Below the Painted Grey Ware lies a red ware, often inadequately fired and susceptible to getting rubbed off even with a mild finger-touch. At Hastinapur, it was christened as ochre-coloured ware. The excavator of Hastinapur concluded that this pottery was likely to be part of the Copper Hoard culture. The Painted Grey Ware culture was brought to an end here by an extensive flood identified by Lal with the one which, according to the tradition recorded in the *Puranas*, was responsible for the shifting of the capital from Hastinapur to Kausambi. Period III, from the early sixth to the early third century B.C., yielded punch-marked coins, copper and iron implements and the N.B.P. Ware. About 250 B.C., the entire township was destroyed by a large-scale fire.

After a temporary break, the site was re-occupied (Period IV) about 200 B.C., as is evidenced by the presence of the coins of Mathura kings and Sunga

terracottas in the lower levels of the Period. The brick buildings of this period reveal a thickly-populated township, with seven structural phases being traced in a trench. The pottery in use was a red ware, often stamped with symbols. The upper level also yielded specimens of a red ware painted in black. In the upper levels, dated to *circa* 300 A.D., imitation coins of the Kushan king Vasudeva were discovered. After a long gap, a new settlement grew up here about 1100 A.D. and continued to flourish till the end of the fifteenth century (Period V). In the middle levels of this period was found a coin of Balban (1266-87 A.D.) and in the upper levels the pre-Mughal glazed ware.

Sringaverapura

Sringaverapura, 36 km. north-west of Allahabad, in Uttar Pradesh, which for all practical purposes may be regarded as the central part of the Ganga Valley, can be approached through village Bhagwatipur near Mansoorabad by covering a distance of three km. from the highway. According to the *Ramayana* of Valmiki, it was from here that Lord Rama, at the beginning of his 14-year exile, accompanied by Sita and Lakshmana, was ferried across the Ganga by the local Nishada chieftain.

The ancient site, sprawling roughly north-south along the left bank of the Ganga, lies in the revenue limits of Singrur, a small village occupying a sizable portion of the site. Seven different parts of the mound, named SVP-I to SVP-7 were selected for excavation by B.B. Lal and K.N. Dikshit as a part of the national project 'Archaeology of the Ramayana Sites'. A combined cross-section of the mound provided a sequence of cultures starting from about the end of the second millennium B.C. up to the early medieval times. The excavators in their paper 'Sringaverapura: A Key Site for the Protohistory and early history of the Central Ganga Valley' (*Puratattva*, No. 10, 1978-79) have summarized the culture-contents of the various periods as under:

PERIOD I (C. 1050-1000 B.C.):

Right on the natural soil and imperceptibly merging with it was a 30-60 cm. thick deposit of yellowish clay (labelled layer 19E), which yielded a red ware industry.

The ware falls into two broad categories: one made of well-levigated clay, nicely potted and well fired; and the other having a coarser texture, somewhat indifferently potted and insufficiently fired. There is an occasional use of slip in both the varieties. A few sherds with raised horizontal bands and shallow incised designs, such as wavy comb-like pattern, parallel lines, etc., were also found. The types include: jars with prominently out-turned rim, bowls with featureless or everted rim, shallow basins with horizontally splayed-out rim, vases with disc-base, and platters. Some of the fragments are suggestive of types like the dish-on-stand (?) and bowl or basin with tubular or short channel. There are also a few specimens of lid, with either a central depression made by fingers, or a curved knob. Remnants of burnt earth with reed-impression suggestive of wattle-and-daub hutments, were also noticed. Not many antiquities were recovered from this period. These, however, comprised pottery-discs, with or without a central perforation, and a small fragment of a flake of carnelian.

Above layer 19 E is layer 19 which is darker in colour than the former, though composition-wise it is also clayey like 19 E. On the other hand, the next higher layer 18, consists of black earth, somewhat loose. Thus, lithologically, layer 19 goes more with 19 E than with 18. However, layer 19 has given red ware sherds of layer 19 E type, accounting for only 21% of the total, whereas it

has yielded the black-slipped, black-and-red and associated red wares to the tune of 79%. These latter are characteristically different from the pottery of layer 19 E., but constitute the principal ceramic industry from layer 18 upwards. It may also be added that in layers 18 and 17 the typical pottery of layer 19 E type gets reduced respectively to 0.68% and 0.09% of the total. Such a situation militates against a real temporal overlap between the two cultures. However, since the evidence is very meagre and confined to a small area, it would not be proper to pronounce a final judgement on the issue. In case there was a time-gap as seems more likely, the thermoluminiscence and C14 dates indicate that it may have been of about fifty years or so.

PERIOD II (C. 950-700 B.C.)

Period II comprises layers 19 to 14, accounting for a thickness of 1.40 m. This period is characterized by black-slipped, black-and-red, burnished grey and associated red wares. It is possible to further sub-divide this Period into IIA (layer 19 and 18) and IIB (layers 17 to 14), the former being characterized by the occurrence of coarse black-and-red ware and burnished grey ware which tend to peter out in IIB. Here it would be of importance to add that a few sherds of the Painted Grey Ware have also been found from layer 17 upwards. Such a situation would suggest a stage of contact between the PGW culture and the Black-Slipped Ware Culture in this area early in the eighth century B.C. Amongst the antiquities of Period II as a whole, mention may be made of points and a barbed arrow-head of bone, a bone pendant and beads made variously of terracotta, jasper, etc., and one of gold as well. The presence of clay lumps with reed-impression indicates that during this period also the houses were made of wattle-daub.

PERIOD III (C. 700-200 B.C.)

Without any break of occupation from the previous one, Period III is characterized by the use of the Northern Black Polished Ware. Having an average thickness of 2.80 m., it is divisible into three Sub-periods, A, B and C. In Sub-period IIIA, the NBPW occurred in great abundance, and in a variety of shades: golden, silvery, indigo, steel grey and, of course, black, the black-slipped ware also continued in this Sub-period. A few sherds of the Painted Grey Ware were also found. Specific mention may, however, be made of a sherd which had a fine grey ware fabric, was painted on the interior with black lines, and had the typical NBPW finish on the exterior over which a row of sigmas was further painted in black pigment. Such a sherd clearly shows the close physical inter-relationship between the Painted Grey Ware and the Northern Black Polished Ware. In Sub-period IIIB, the miniature bowl, Ahichchhatra type 10a, and carinated *handi* made their appearance, whereas in Sub-period IIIC the quality as well as the quantity of the NBPW were on the wane, and coarse grey ware became preponderant. It may also be added that no burnt-brick structures were met with in Sub-period IIIA, and their presence in IIIB was also not very clear. However, burnt-brick structures were duly noted in Sub-period IIIC. The end of this period was marked by a burnt layer running all around the section.

The important antiquities of this period as a whole include three copper vessels (one of them spouted), a long-handled ladle, dishes and bowls; terracotta female figurines and balls; beads of semi-precious stones, gold and terracotta; cylindrical weights of agate and chalcedony; bone points; copper and iron objects; and punch-marked coins of silver as well as copper.

PERIOD IV (C. 200 B.C.-A.D. 200)

Having an occupational thickness of about 2.75 m., this Period is divisible into two Sub-periods. The notable characteristic of this period as a whole is its red ware industry, there being no NBPW nor even the grey ware. Bowls with incurved rim and dishes with flat base and vertical rim are the notable features of the red ware pottery of Sub-period IVA. In IVB bowls with vertically sharpened rim, sprinklers, vases with long vertical neck and ink-pot type lids dominate the scene. Burnt-brick structures ascribable to different phases were also noticed. In this context, particular mention may be made of a structural complex in SVP-I, which consisted of several rooms with successive brick-floorings, a drain and a soakage pit. The last-named was dug down to a depth of about 4 metres without reaching its bottom. It was lined with bricks, the number of courses being over 90.

Lal and Dikshit observe: 'Amongst the antiquities of Sub-period IVA, particular mention may be made of a coin of the Lanky Bull type and of coins of the rulers of Ayodhya, besides Sunga terracottas. The antiquities of Sub-period IVB comprised seals and sealings. one of them reading Dhankasa, and another Gosalakasa in characters of the first century B.C.-A.D., and coins of Wima Kadphises.'

Ascribable to Sub-period IVB was a massive burnt-brick tank consisting of two units, with an elaborate inlet and interconnecting system, excavated in the natural soil in the low-lying area (SVP-4) to the north of SVP-1. The Sringaverapura tank, the length of which is nearly ten times that of the Mohenjo-daro tank, proves the hydraulic engineering skill which is far above that known from any other ancient example in the sub-continent. This tank is. therefore, discussed in detail at the end.

PERIOD V (A.D. 300-600)

The distinguishing feature of the pottery of this period was a bright red slip. As to the shapes, while variants of the ink-pot type lids and sprinklers continued, bowls with footed base and jars with drooping rim were the new forms. Moulded pots also appeared. Amongst the antiquities, particular mention may be made of terracotta figurines stylistically ascribable to the Gupta times.

PERIOD VI (C. A.D. 600-1300)

It is marked by the post-Gupta stage, from about the sixth-seventh century A.D. A noteworthy find of this period was that of thirteen silver coins of the Gahadvala king Govinda Chandra, which lay in a small pot along with some jewellery, including a gold ring.

PERIOD VII (A.D. 17TH-18TH CENTURY)

To the last occupation, found in the excavation, belonged a large house-complex. In a few instances, the walls had been robbed but the plaster was still standing, which gave the outlines.

One of the major contributions of this excavation is the identification in the mid-Ganga valley of a red ware industry which, for all one can say at the moment, is associable not with anything eastern but probably with the Ochre Colour Ware of the western Ganga valley. This would suggest the penetration of the OCW Culture much further to the east than was hitherto known, for example, from Saipai in Etawah District. Though the method of thermoluminiscence dating is still in its infancy, the available dates for the Sringaverapura specimens suggest that the OCW continued in the mid-Ganga valley up to the end of the second millennium B.C. This agrees fairly well with the TL dates for

the OCW Culture in the western region, for example, for sites like Atranjikhera, Jhinjhana, Nasirpur, etc., which indicate a time-range around 1500 B.C. At Sringaverapura, one thus meets the fag-end of the OCW Culture. However, since at this site there seems to be a break of occupation after the OCW Culture, one does not yet know if and in what manner this culture contributed to the subsequent cultures of the region.

The culture of Period II, characterized by burnished grey, black-and-red and black-slipped wares is evidently a continuum of the one dominating western Bihar (e.g., in the Chalcolithic levels of Chirand) and parts of eastern Uttar Pradesh (for example, that found at Kakoria). Sringaverapura Period II, datable to *circa* 950-700 B.C., represents perhaps the last stage of this culture.

Another significant discovery at Sringaverapura is the occurrence of a few sherds of the Painted Grey Ware as early as layer 17, which, as discussed above, is ascribable to c. 8th century B.C. The occurrence of these PGW sherds in a limited quantity at Sringaverapura shows a contact with that culture around the beginning of the eighth century B.C.

A no less noteworthy point is about the first appearance of the Northern Black Polished Ware at the site, marking the beginning of Period III. Since there is no break of occupation between Periods II and III, the appearance of the NBPW over here will have to be placed around the beginning of the 7th century B.C. In these early NBPW levels also there occur a few sherds of the Painted Grey Ware, showing that it was around this time that the PGW was coming to an end and the NBPW was emerging.

According to Lal: 'With the excavations at Sringaverapura, it is now possible to sub-divide the NBPW Period into three Sub-periods, viz., IIIA, IIIB and IIIC, the characteristic features of which have already been discussed in the foregoing pages. It is Sub-period IIIA that constitutes the lowest common denominator at the sites associated with the Ramayana story, viz., Ayodhya, Sringaverapura, Bharadvaja Ashrama and Chitrakut. This would place the story early in the seventh century B.C.'

SRINGAVERAPURA TANK:

The first century B.C.-A.D. tank, mentioned above, is of course the most notable contribution of Sringaverapura to the early historical archaeology of the country. It is a monumental structure throwing much valuable light on the skill and foresight of Indian hydraulic engineers some two thousand years ago and, therefore, we give below some extracts from the excavators' article entitled 'The giant tank of Sringaverapura'.

'The Indian subcontinent has already produced ancient water tanks. A well-known example is the great bath of Mohen-jo-daro, dating to the third millennium B.C. and used for storing water brought by hand from a nearby well. This find seems insignificant in comparison with the immense tank recently discovered at Sringaverapura. Though the excavation is unfinished, this tank-complex already measures over 200 metres in length, nearly ten times that of the Mohen-jo-daro tank.

'Its great size is not the only reason for its importance. Hydraulic engineers from various parts of the country who have examined this tank in great detail claim that most of the steps and precautions taken today for river-fed water-supply tanks are the same ones taken at Sringaverapura 2,000 years ago.

'At the beginning of the Christian era when the township at Sringaverapura began to expand, its inhabitants needed an adequate water-supply. The ancient engineers decided to make use of a low-lying area between the eastern

and western parts of the mound, already partly eroded, and set up a water-supply system, unique in several respects.

'There is an ancient nullah (watercourse) which joins the river a little to the north of the Sringaverapura mound. During the rains, the lower part of the nullah fills with water from the river. After observing this annual phenomenon, the ancient engineers dug a deep, wide channel to carry the flood-water to the low-lying area. The water was brought in turn to two deep, roughly circular chambers, cut into the natural clay, where the silt and other muck were allowed to settle. From the upper level of the second silting chamber, relatively clean water passed through a 1.60 metre wide inlet channel into the main tank-complex, constructed entirely of kiln-fired bricks. The mouth of the inlet channel has a stepped base and is flanked by two curved walls to break the force of the water as it rushed in. The inlet channel is also curved, and becomes wider as it proceeds inwards. When the water fell into the tank-complex, it was made to cascade over a series of steps and at the point where it fell on to the bed, a paving of bricks, measuring 64 by 48 by 12 cm., was provided to prevent any possible erosion.

'In addition to these various technical devices, the ancient engineers allowed for what is today technically known as "horizontal and vertical warping". Tank A, which received the water first, becomes wider as the distance from the inlet channel increases. This made the water spread out without bringing undue pressure on the side-walls. They are not vertical but slope back at an angle of about 11° to the vertical, reducing further the force of the incoming water. This tank measures 34 metres in length, 13 metres in width and 4 metres in depth. Like the two chambers already referred to, it also seems to have been used primarily for siltation. From its upper level, fully cleaned water passed into tank B, through a channel about 5.30 metres long and 1.35 metres wide. Here, too, the water cascaded over a series of steps to reach the bottom, where again the remains of a brick-pavement have been found. Tank B is much larger than tank A, the overall width at the top being nearly 26 metres and the depth 7 metres. It has three successively higher retaining walls, each one being constructed about 2 metres outwards from the one below it. All three are inclined to the vertical at angles varying from 10° to 13°. The lowest retaining wall alone has as many as 49 courses, reaching a height of 3.20 metres.

'It would appear that tank B was the main one, for in it we have discovered three separate staircases each leading down to the water-level. At another place two flights of facing steps were found; these descend to a level where a ramp, built of bricks set on their edges, continues to the bottom of the tank.

'Besides meeting the prime need of water-supply, Tank B seems to have been used for religious purposes as well. Many terracotta figurines of a goddess holding a child in her arms, probably Hariti or her equivalent, have been found in it. These figurines appear to have been ceremoniously immersed.

'Tank B discharges its water into another adjoining circular Tank C and from there the overspilling water merges with the Ganga. From Tank C, terracotta figurines datable to Ist-2nd century A.D. have been found from the alluvial deposit.'

'One final fact remains to be noted: the main tank, B, was not only carried down to sub-soil water-level but in its bed several wells were also sunk to allow subsoil water to rise more easily. This arrangement of interlinking the stored water with subsoil water was obviously made to ensure an adequate water supply even during the dry summer months.'

Ahichchhatra

Ahichchhatra, which is mentioned in the *Mahabharata* as the capital of North Panchala (Northern Ganga-Yamuna Doab), is situated near the village of Ramnagar in Bareilly District of Uttar Pradesh. The site was excavated superficially by Cunningham, including a mound 3 km. west of it, which is supposed to conceal a *stupa* built by Ashoka. The Archaeological Survey of India excavated at selected places within the fort, under the direction of K.N. Dikshit and A. Ghosh, during 1940-44, when more extensive work was carried out. Later, between 1963 and 1965, the site was again excavated by Dr. N.R. Banerjee, N.C. Ghosh, M.C. Joshi and H.K. Narain to obtain a fresh index of the site.

In historical times, Ahichchhatra gained prominence in the first century B.C. under the Panchala rulers known to us from their coins. Hiuen Tsang saw here ten Buddhist monasteries and nine Brahmanical temples. By the eleventh century, the capital of Panchala had been shifted to Vodamayuta (modern Badaun in Uttar Pradesh).

The remains of Ahichchhatra consist of a brick fortification with a perimeter of 5.6 km., enclosing a series of rolling mounds, of which the highest two mark the sites of temples. About three km. to the west of the fortified area are the ruins of some *stupas.*

A. Ghosh, who excavated the site, writes: 'In the main excavated plot the first occupation was marked only by pits full of pottery dug into the natural soil. The next two periods (Periods II and III) were characterized by mud buildings, all crushed, a distinctive pottery in the form of shallow dishes in grey ware and coins of the uninscribed cast type. Period IV marked the first brick buildings on the site, the first appearance of Panchala coins of the first century B.C. and the disappearance of the earlier grey pottery. The next period (V) was a continuation of Period IV; no coins later than those of the Panchalas were found. Period VI was represented by several blocks of single contiguous chambers of fine brick-work. It yielded Kushan coins for the first time and had a distinctive type of water-vessel of rough ware.

'The remains of Period VII were a temple-complex consisting of low brick shrines within an enclosure of irregular shape. At one corner of the temple-compound was found a good number of large-size terracotta images of Brahmanical deities, stylistically ascribed to the Gupta age. Coins of Achyu (identified with Achyuta, defeated by Samudragupta in *c.*350) made their appearance for the first time in the lower levels of this period.

'Period VIII consisted of poor structures situated amidst thick layers of ashes and of a large number of cylindrical pits filled with pottery and probably representing potters' kilns. A class of pottery, small moulded bowls with decorations in relief, was distinctive of this period. In Period IX the houses were poor and were mostly built of fragmentary bricks collected from old debris. Large plots of land were left unoccupied. Everything pointed to a general decay in the life of the city. The date of the Period was fixed by two hoards of debased silver coins of Adivaraha and Vigraha (ninth-tenth centuries) found buried below the walls of this period.

'The two conspicuous brick temples mentioned above belonged to the class of terraced temples, each terrace made of foundation-cells round a square frame, both filled with earth. Both the temples underwent many restorations and extensions, resulting in increase in their dimensions. One of them was founded on a layer of typical Period VI (Kushan) pottery and could not therefore have begun before the early Gupta age (fourth century). Both the

temples remained in use till the desertion of the city. Loose in the debris were found a large number of carved bricks and a few terracotta sculptured panels which once adorned the walls of the temples.

'The fortification of the city was partially excavated at two places, and it was found that below the top brick wall there were two successive earthen ramparts. From the fact that grey pottery, characteristic of the site down to 100 B.C., appeared in the core of the heaped-up material and that later pottery was absent, it seemed likely that the original rampart was erected shortly after that date and might be attributed to the Panchala rulers, with whom were also coeval the earliest brick buildings on the site.

'A feature of the site was a partition-wall which divided the city in two unequal halves, the eastern and smaller half being deserted after the setting up of the wall in about the seventh century.'

The excavations of Ghosh did give a very good chronology of the site but the position regarding the earliest horizons of the cultural sequence became clearer in 1965 when Dr. N.R. Banerjee brought out definite evidence of the early occupation belonging to the users of ochre-coloured ware at the site. The next cultural horizon belonged to the Painted Grey Ware using folk common to the Ganga-Yamuna Doab.

Kausambi

According to literary tradition, the capital of the Pandava rulers was shifted from Hastinapur to Kausambi five generations after the *Mahabharata* war. Kausambi continued to be one of the leading political centres of north India till after the Christian era.

The ruins of Kausambi have been identified at Kosam on the northern bank of the Yamuna in Allahabad District. The site lies at a distance of 52 km. west-south-west of Allahabad. Following a small excavation by the Archaeological Survey of India in 1937-38, the Allahabad University undertook a major excavation here in 1949 under the direction of Prof. G.R. Sharma, who on ceramic evidence, has divided the 16 m. thick deposit here into the following five periods:

Periods I and II	*c.* 1165-885 B.C.
Period III	*c.* 885-605 B.C.
Period IV	*c.* 605-45 B.C.
Period V	*c.* 45 B.C.-580 A.D.

The excavation within the fortified area, near the eastern gate, laid bare the remains of a large brick monastery, identified, on the basis of an inscribed slab ascribable to the first century A.D., with the Ghoshitarama monastery, the base of an impressive *stupa*, enlarged more than twice, and within the enclosure of the latter a few small *stupas*, some yielding relics, a temple of Hariti and an elliptical structure. The excavations have also thrown light on the age and character of the massive fortifications which enclose the ancient ruins and the connected habitations.

The retreat of Ghoshitarama was graced by Lord Buddha on more than one occasion. Many of the Buddha's direct disciples, including Sariputra and Ananda, spent some time in this Vihara.

Religion found a strong footing here mainly through the efforts of the three leading bankers of the city — Ghoshita, Kukkuta and Pavarika. Once when the Buddha was staying at Jetavana, these three merchants went in a body to invite the Buddha to their place. When the Buddha agreed, each of

them built a retreat to receive him with his followers. Thus came into existence here Ghoshitarama, Kukkutarama and Pavarikambavana (Pavarika's mango-grove). A fourth lodging in or around Kausambi was the Badarikarama, while the fifth, a *vihara*, was erected by a woodcutter of king Udayana, Uttara by name. The king who was at first hostile towards the new religion became later friendly towards the Buddha.

The establishment continued to flourish under the aegis of the Maghas and later on the Guptas, till it suffered serious reverses at the hands of the Hunas under their chief, Toramana (*circa* A.D. 500-515), who was anti-Buddhist.

Mrs. Debala Mitra writes in *Buddhist Monuments* (Calcutta, 1971, p. 83): 'The monastery was of the usual quadrangular type with a central courtyard, a pillared verandah, cells and two pylons flanking the entrance to the monastery. The inscription referring to the monastery records the dedication of a slab relieved with foot-prints, evidently of Buddha, in the abode of Buddha by a monk.

'The base of the stupa, of burnt bricks, was roughly 81 ft. square. Its central portion was not solid; it was also square, but divided by two diagonally arranged cross-walls of bricks into four triangles packed with alternate floors of mud and bricks. Later additions provided it with central projection on four sides so that it became *tri-ratha* on plan.' The finds included a rich crop of architectural pieces, including carved balustrade-pillars, and stone sculptures. The latter include images of Buddha and Bodhisattvas, of which three are dedicated by the nun Buddhamitra and two in the region of Bhadra Magha (second century A.D.) and a few others assignable to the Gupta period.

A few other important discoveries made at Kausambi are the Syenachiti, the palace-complex and the fortification. The Syenachiti is an artificial sacrificial altar erected in the form of an eagle (*syena*) in flight. The altar is of bricks and measures 49′8″×33′6″. This type of altar is recommended as the base for the *Purushamedha* (human sacrifice). The form of the flying bird would indicate the sacrificer's ascent to heaven and the *Purushamedha*, involving human sacrifice, is for the attainment of political supremacy.

The defence system of Kausambi comprises an irregular oblong-shaped fortification interspersed with bastions, guard-rooms, etc. Inside the well-defended city are the palace and house-complexes, with drainage and other sanitary facilities, roads and lanes. The fortification was surrounded by a deep moat.

The excavator, on the basis of stratigraphy, associated finds and radio-carbon dates, has given a time bracket of *c.* 1100 B.C.—A.D. 580 for the occupation at Kausambi. The lower time-limit has, however, been questioned by A. Ghosh, K.K. Sinha and K.S. Ramachandran. Ghosh thinks that the defence-wall is not as old as it has been held to be, while Sinha has questioned the origin of occupation at Kausambi appreciably earlier than the period of the Northern Black Polished Ware. Ramachandran also, on independent grounds, has tried to correlate the conventional dating methods with carbon-14 dates and opines that the occupation at Kausambi began in the middle of the seventh century B.C.

B.B. Lal (*Puratattva*, No. 11, 1979-80, p. 93) concludes that Rampart-2 of G.R. Sharma, which is really the first rampart, is unlikely to be earlier than sixth century B.C. It may very well be even somewhat later.

In *Puratattva*, No. 15, 1984-85 (p. 98), Lal questions the entire chronology of the site and states that the so-called Syenachiti comes out to be nothing but a brick-mass fallen from the revetment of the defences into the adjacent moat.

Piprahwa (Kapilavastu)

The credit for identifying on the basis of archaeological remains the lost town of Kapilavastu, where Gautam Buddha had spent the first twenty-nine years of his life before renouncing the worldly life, goes to K.M. Srivastava. The question of the physical identity of this place has raised a world-wide controversy and Srivastava by his findings claims to have convincingly settled it.

After the discovery of the Asokan pillar at Lumbini, recording the place of birth of Buddha, A. Fuhrer had declared in 1898 that Tilaurakot in Nepal was the ancient Kapilavastu. To corroborate his statement, he had calculated the distance of Lumbini from Kapilavastu to be sixteen miles on the basis of the travel document of Hiuen Tsang. He did not, however, take into account the fact that Fa-hien had gone straight to Lumbini from Kapilavastu whereas Hiuen-Tsang had first gone to Sarakup and then to Lumbini. The waters of the fountain at Sarakup were as clear as a mirror. During an athletic exercise there, the arrow shot by Buddha in his childhood, after penetrating the targets, fell and buried itself up to the feather in the ground causing a spring of water to flow forth. The spring had healing powers of great reputation. According to Fahien, the distance from Kapilavastu to Lumbini was only fifty li = nine miles.

In the absence of adequate data in the Buddhist texts, the archaeologists had to depend for the identification of the lost town of Kapilavastu mainly on the travel documents of Fa-hien and Hiuen-Tsang, who had come to India on pilgrimage in A.D. 399 and A.D. 629 respectively. But the towns from where the distance of Kapilavastu was mentioned by these pilgrims were also not known. The attempts to identify these towns by Lassen, Cunningham, Carlleyle and others in the nineteenth century were a mere wild goose chase. A. Fuhrer, P.C. Mukherjee, V.A. Smith and others also tried to locate Kapilavastu, particularly after the discovery of the Asokan pillar at Lumbini in 1896 and the inscribed relic casket from the *stupa* at Piprahwa in 1898.

Piprahwa in Basti District of Uttar Pradesh is twenty-two km. north of Naugarh on the Gorakhpur-Gonda loop line of North-Eastern Railway while Tilaurakot in Nepal is twenty-four km. north-east of another railway station, Shohratgarh, on the same railway line.

Though the inscription on the relic casket discovered by Peppe coupled with the distance from Lumbini recorded by the Chinese pilgrim Fa-hien should have been considered enough to proclaim that Piprahwa, nine miles from Lumbini, was the ancient Kapilavastu, the statement of Fuhrer made in 1896 continued to tilt the balance in favour of Tilaurakot.

The text of the inscription on the relic casket from Piprahwa reads as follows:–

> *Sukiti bhatinam sa-bhaginikanam sa-puta delanam iyam salila nidhane Budhasa bhagavate Sakiyanam.*

The interpretation of this inscription generally accepted by the scholars was that the relics inside the *stupa* are those of Buddha of the Sakya community. The corporeal relics of Lord Buddha, according to *Mahaparinibbanasutta*, were shared at Kushinagara immediately after his *mahaparinirvana*, by eight communities, one of them being Sakyas of Kapilavastu from which he hailed.

V.A. Smith was also responsible for complicating the problem of the identification of Kapilavastu. In the first instance, he said spontaneously, "My identification of the Piprahwa site with the Kapilavastu of Fa-hien rests upon the pilgrim's description of his itinerary." The declaration of Fuhrer had, however, such a deep impact on his mind that he tried to accommodate the

two views, and, without losing much time, said, "At last a process of reasoning such as I have sketched above suddenly brought me to the unexpected conclusion that Piprahwa is the Kapilavastu of Fa-hien whereas the city round Tilaurakot is the Kapilavastu of Hiuen Tsang." Smith thus gave birth to the theory of two Kapilavastus though he himself was unable to justify it. Candidly admitting his ignorance, he said, "If I am asked the reason why, in or about A.D. 406, Piprahwa was regarded as representing Kapilavastu, whereas in A.D. 635 the city on the Banganga was regarded as representing the same place, I can only reply that I do not know the reason, and to plead ignorance concerning events which occurred fifteen hundred years ago is excusable."

Uncertainty about the exact location of Kapilavastu continued to persist. Dr. (Smt.) Debala Mitra of the Archaeological Survey of India was deputed in 1962 to conduct exploration and excavation in the Nepalese *tarai*. She conducted a small-scale excavation at Tilaurakot and could not find any evidence to accept the view of the site being Kapilavastu. So she declared, "In fact, the inscription on the reliquary found within the main *stupa* at Piprahwa coupled with Piprahwa's correspondence with Fa-hien's bearing and distance of Kapilavastu in relation to Lumbini raises a strong presumption for Piprahwa and its surrounding villages like Ganwaria being the site of Kapilavastu."

K.M. Srivastava writes, "Amidst such uncertainties, the text of the inscription on the casket found by Peppe in 1891 in the *stupa* at Piprahwa spurred the attention of the author when he was posted at Patna in 1970. A detailed study of the inscription made him confident that the *stupa* at Piprahwa was the relic shrine of Lord Buddha and the original relics were still lying untouched in the same *stupa*. The inscribed casket could not be said to contain the original relics enshrined by the Sakyas on account of the wide gulf of time between the date of the inscription and the death of Buddha. The same must have been placed in the *stupa* at the time of reconstruction. Once the relics were found, the site could be easily identified with Kapilavastu. Excavation at Piprahwa was, therefore, commenced by the author in 1971 with an unflinching faith that it was the site of ancient Kapilavastu."

In 1972, two burnt brick chambers of an identical shape were observed at a depth of six metres in a small trench sunk in the centre of the stupa. The excavator records, "Placed side by side, a soapstone casket and dish were embedded below three bricks in the northern chamber. Two dishes and another soapstone casket were placed at different levels in the southern brick chamber. The casket in the northern chamber was 7 cms. in diameter and 2 cms. in height, whereas the casket in the southern one was 9 cms. and 16 cms. respectively. They contained charred bones. The relic caskets could be dated to 5th-4th centuries B.C. on the basis of associated antiquities. These caskets were stratigraphically earlier than the inscribed casket found by V.C. Peppe in 1898 in a massive sandstone coffer at a depth of eighteen feet only."

The discovery of these fresh caskets datable to an earlier period and synchronising with the date of the *mahaparinirvana* of the Buddha was an important further step towards the identification of Kapilavastu. According to Srivastava, "With certainty it could be declared that the relics were the same which were enshrined by the Sakyas of Kapilavastu over their one-eighth share. In the absence of any inscription, however, a little margin of doubt on the identification of Kapilavastu continued to have its hold on the minds of archaeologists."

The ancient history of India took a dramatic turn in March, 1973, when a large number of terracotta sealings inscribed with the legend Kapilavastu were

collected from the eastern monastery. This settled the issue of the identification of Kapilavastu. A lid of a pot, which was also inscribed with the legend Kapilavastu and was found in 1974, further corroborated the identification.

On one category of sealings and the lid of the pot, the text was *Om Devaputra Vihare, Kapilavastu Bhikkshu Sanghas,* whereas on others it read *Maha, Kapilavastu, Bhikkshu Sanghas*. The word *Devaputra* indicated that the eastern monastery was built under the patronage of Kushan kings for the order of monks of Kapilavastu. The excavator writes, 'The sealings also established that the *stupa*, which yielded the caskets, was in the first instance constructed by the Sakyas over their one-eighth share of corporeal relics received at Kushinara after the cremation of the Buddha. Subsequently, the stupa was reconstructed twice, the earlier one indicated by the massive sandstone coffer containing the inscribed casket and the later one by a single casket found in a completely smashed condition at a depth of ten feet only by V.C. Peppe. During the last phase, the base of the stupa was converted into a square and embellished with niches at regular intervals for keeping sculptures, probably in Kushan times, when image worship was introduced.'

About a km. south-east of the stupa complex, the main township was unearthed. On account of revenue jurisdiction, this site was named after the village Ganwaria. In 1975, two massive burnt-brick structures with impressive projected entrance to the east were brought to light. Extensive structural remains, both secular and ecclesiastical in character, spread over a large area and corroborating once again the identification with the ancient Kapilavastu were unearthed subsequently.

Srivastava records: 'Four shrines constituted the ecclesiastical group of structures. Of all the four, the second shrine towards the south-eastern side of the smaller structure was most magnificent. The shrine must have occupied an important place, because it yielded a large number of Buddha heads in terracotta. One of the rooms just opposite the main entrance of the smaller structure was also converted into a place of worship with the help of moulded bricks. A beautiful terracotta figure of Lord Buddha in a unique *mudra* was recovered from the converted shrine. The Lord is seated on a double lotus throne, in a contemplative mood, holding the fingers of his left hand with the right.'

According to Hiuen Tsang, the residential structures of the town of Kapilavastu were converted into shrines and monasteries in the later stages. The excavations by the Archaeological Survey of India have confirmed this.

The earliest occupation at Ganwaria had started in the eighth century B.C. whereas the occupation at Piprahwa had its beginning only after the *mahaparinirvana* of the Buddha when his corporeal relics were brought and enshrined in the stupa. Monasteries for the monks were constructed at Piprahwa after the erection of the stupa. The occupation at both the sites, Piprahwa and Ganwaria, came to an end by a devastating fire sometime in the fourth century A.D.

The discovery of a large number of Buddha heads in the Kushan level indicates the revival of Buddhism under the patronage of the Kushanas.

Piprahwa being a funerary site was poor in antiquities while Ganwaria, in conformity with a town-site, yielded very rich and varied antiquities. A decorated stone disc depicting bull, elephant and lion interspersed by *chakra*, similar to those on the abacus of Asokan pillars, is very interesting.

Within the ambit of Kapilavastu, another stupa and monastic complex was excavated at Salagarh towards the east of Piprahwa, 200 m. away.

In 1977, the concluding season of the excavation, two hoards of coins — sixty-four silver punch-marked coins and thirty-seven copper coins of Kushan kings — contained in pots were found.

The stupa at Kapilavastu, which town was named after Kapila *rishi*, is the third among those stupas which were discovered while the remaining seven still await the spade of the archaeologist.

Let us remember that archaeological evidence is of importance in deciding the physical identity of Kapilavastu and the oresent-day political boundaries are not important, for the line of demarcation between India and Nepal has its origin in the British rule and did not exist during the time of the Buddha and his father, Suddhodana.

Vidisha (Besnagar)

The ancient city of Besnagar, District Vidisha, Madhya Pradesh, already famous for the Heliodorous pillar, also known as Vidisha, Bhilsa, etc., lies about 3 km. north-west of modern Vidisha, girdled and protected by two rivers, the Betwa and the Bes, on three sides and a fortification wall on the west. Renewed excavations at the site were conducted under the direction of M.D. Khare of the Archaeological Survey of India from 1963 to 1965 and from 1975 to 1976 to determine the antiquity of the site. The remains of Vidisha were brought to light for the first time by Sir Alexander Cunningham in 1875-77. Thereafter, Lake (1910) and Bhandarkar (1913-15) also excavated there.

Khare writes: 'The results proved to be quite rewarding as a connected sequence of cultures ranging from the chalcolithic, through Painted Grey Ware, N.B.P. Ware, Naga, Kashatrapa and Gupta periods to the early medieval times, was met with.'

The excavations revealed the following periods:

Period I (a) Microlithic (Pre-pottery) (Non-geometrical)
Period I (b) Microlithic (Geometrical)
Period II (a) Chalcolithic (1800-1500 B.C.)
Period II (b) Chalcolithic and P.G. Ware (1100-900 B.C.)
Period III (a) Pre-N.B.P. (900-500 B.C.)
Period III (b) N.B.P. (500-200 B.C.)
Period IV — Sunga-Satavahana (200 B.C. – Ist century A.D.)
Period V — Naga-Kushana (Ist century A.D. – 3rd century A.D.)
Period VI — Gupta (3rd century A.D. – 5th century A.D.)
Period VII — Early Medieval (9th century A.D. – 11th century A.D.)
Period VIII — Late Medieval to Modern (18th century A.D. – early 20th century A.D.)

A significant feature of the site besides pushing back the antiquity of the settlement to microlithic times was the discovery of the overlap of the chalcolithic culture with that of the Iron Age represented by the Painted Grey Ware.

Besides a large number of antiquities and several coins, the notable structures exposed at Vidisha were an elliptical temple datable to the 4th-3rd centuries B.C. at the site of the Heliodorous Pillar, which in turn was contemporary with a rubble enclosure wall of a temple of Vasudeva of the Garuda pillar inscription and a palace complex at the confluence of the two rivers.

Mathura

Interesting archaeological evidence relating to the period between *circa* 600 B.C. and the sixth century A.D. has been unearthed as a result of the latest

excavations at Mathura in Uttar Pradesh conducted by the Archaeological Survey of India under the direction of M.C. Joshi from 1973-74 to 1976-77.

Earlier well-known archaeologists and scholars like Cunningham, Grouse, Fuhrer, Vogel and others conducted significant explorations and excavations at and around Mathura in the nineteenth and twentieth centuries and exposed many unknown facets of the historical period. In 1954-55, M. Venkataramayya and Ballabh Saran carried out a small-scale excavation at Katra mound and unfolded a sequence of cultures ranging in date from *circa* 600 B.C. to *circa* 600 A.D.

Excavations were resumed with the principal aim of examining the antiquity, growth and character of historical Mathura. To realize this, examinations at fourteen sites located in the eastern, southern, western and northern parts, including across *Dhulkot* (mud-fortification) and Kankali Tila outside the fortification were taken up. The recent excavations unfolded a sequence of five cultural periods.

Period I, from *circa* sixth to the closing decades of the fourth century B.C., is marked by the presence of Painted Grey Ware and associated grey ware, red ware and a very meagre quantity of black slipped and black and red ware. The period consists of two phases, viz., a lower (IA) and an upper (IB) phase. Phase IA, beginning right on the natural soil, was characterized by two structural levels, the earlier represented by a mud-floor with post-holes and the latter by a partially extant platform. Phase IB did not show any major change in pottery types, except for the appearance of about seventeen sherds of the Northern Black Polished Ware.

Period II, from the closing decades of the fourth century B.C. to *circa* 200 B.C., was distinguished by the use of the Northern Black Polished Ware and associated pottery, including plain grey ware. The major structural feature of the period was the construction of mud-fortifications around the settlement. The structural activity of the period was represented by compact-mud-platform with mud floors associated with ringwells. Remains of dislocated soakage jars, probably forming a drain, were also noticed. Important antiquities of the period comprised a few punch-marked coins of copper, terracotta human and animal figurines, toy wheels, gamesmen, decorated disc, bangles, beads of semi-precious stones and bone and ivory arrowheads. The figurines included several types of mother-goddess. Another significant find from the levels of this period was a miniature pot containing twenty-four beads of amethyst and topaz.

Period III, from *circa* 200 B.C. to about the end of the first century B.C., marked the last phase of the Northern Black Polished Ware and showed greater popularity of utilitarian forms. The other ceramics consisted of both the plain grey of earlier tradition and red wares.

The early levels of Period III showed constructional activity in mud-medium, represented by mud-platforms and rammed floors, in some cases finished with a layer of *surkhi.* It was only in the middle and upper levels of this period that baked bricks were popularly used in the construction. A structure exposed consisted of a building which might have been used as a granary. Earthern tiles were the common roofing material. Terracotta plaques showing human figures in the typical Sunga style were found.

Period IV, from *circa* first century A.D. to third century A.D. witnessed major constructional activity, as indicated by the construction of a huge tank complex, and inner fortification wall, revival of the original *Dhulkot* of Period II and its enlargement, remains of walls in mud and baked bricks, mud-floors with ovens and drain in baked brick.

At Kankali Tila, the site of the ancient Jain stupa, which was dated by earlier scholars to 2nd century B.C., is considered by M.C. Joshi to have been founded not prior to the latter half of the Ist century B.C. Here an impressive tank complex was exposed. It showed four phases of construction. The first phase could be ascribed to around the first half of the first century A.D.

The pottery of this period is represented by sprinklers, spouted jars, incense burners, bowls and pots with plain and decorated exteriors. Some of the pottery bears painted designs and stamped motifs.

Among notable antiquities, mention may be made of seal and sealings, coins, bone points, skin-rubbers, animal-headed gamesmen, human and animal terracotta figurines prepared out of single or double moulds, including that of *Yakshi* in the typical Mathura art tradition. The terracotta figurines of Bodhisattva, Maitreya and Gaja-Lakshmi were among the interesting antiquities.

Two stone inscriptions, one of the 5th regnal year of Kanishka I referring to a gift of a lady named Vishakhamitra and another of Huvishka of 50th regnal year recording probably a donation to Dhanyavarma Vihara were among the significant discoveries of this period.

Period V, from *circa* fourth century A.D. to the close of the sixth century A.D., was characterized by the presence of mud-platforms with traces of structures on the top. The pottery of this period consists of bowls, basins, vases and sprinklers of a cruder variety, besides painted and moulded pottery with artistic decoration. Important antiquities of the period included Buddha-heads in typical Mathura art-tradition, an image of Vishnu with the head missing, fragments of *prabhamandala*, terracotta figurines in typical Gupta style, and an embossed figure of Ganga on a sherd.

At Govardhan Hill, 30 km. from Mathura, some Stone Age tools were discovered by Prof. R.V. Joshi and M.C. Joshi.

Purana Qila, Delhi

B.K. Thapar and M.C. Joshi of the Archaeological Survey of India carried out excavations at Purana Qila in Delhi from 1969 to 1973. Earlier, some trial-excavations were carried out at this site by B.B. Lal in November, 1954, for about a week.

The principal objectives in digging at this site were: (i) to obtain a complete sequence of occupation at the site backwards from the top level which dates from the Humayun period and (ii) to lay bare sizable portions of the settlement of each period.

Purana Qila, the existing fortification walls of which were built during the reign of Humayun and Sher Shah, is traditionally identified with the site of the ancient Indraprastha, associated with the Pandavas of the *Mahabharata*.

The festivities which took place in Indraprastha have been elaborately described in the *Mahabharata* and there is some description of the city itself also, although in a conventional order. On the occasion of the *Rajasuya Yajna* (a royal sacrifice of Vedic origin), the entire city of Indraprastha had resounded with chanting of Vedic hymns. Indraprastha is referred to in the *Mahabharata* and Pali literature and later texts as an important town of the Kuru region.

Indraprastha perhaps eclipsed the glories of Hastinapur during the short reign of Yudhishthira though it was perhaps the second city of the empire. When the empire was divided by Yudhishthira at Hastinapur, Indraprastha went to the only surviving son of Dhritarashtra, Jajutsu, and Hastinapur was given to Parikshit, son of Abhimanyu.

The city of Dinpanah was built by Humayun and Sher Shah razed it to the ground. On the site of this city, which was also perhaps the site of the ancient Indraprastha, the capital of the Pandavas, he raised the citadel of Purana Qila. When Sher Shah died in 1545 A.D., the fort was still incomplete and it was perhaps completed by Humayun. Around this citadel, Sher Shah had an extensive city and two points on its circumference were provided by the large and impressive gates to the west of Purana Qila and Kotla Ferozeshah on the Delhi-Mathura road, both known as Kabuli or Lal Darwaza.

Inside the Qila, Sher Shah Suri built the Qal'a-i-Kuhna Masjid, which served as the Chapel Royal. This mosque, which is an improvement upon the Moth-ki-Masjid built by Miyan Bhoiya, anticipated the mosque-design of the early Mughal period and emphasized the ornate phase of Sher Shah's architecture.

Humayun, who ascended the throne of Agra on December 30, 1530, but was pushed out of the country by Sher Shah in 1538, could not pay attention to architecture. But after regaining his throne, he did complete Purana Qila before his death in January, 1556.

To the south of the Masjid stands the Sher Mandal, which was originally constructed as a pleasure-tower. Humayun used it as his library. As he was descending, he heard the call of the Muezzin and seated himself down immediately on the steps. When he got up, his feet slipped and he fell down. The injuries which he sustained brought about his end in 1556 A.D.

The fortifications of Purana Qila built during the reign of Humayun and Sher Shah enclose a mound containing more than eleven metres of occupational strata. The archaeologists, as a result of four seasons of work, have unearthed here the remains of several successive settlements. In the excavated trenches, scanty occurrence of the sherds of the Painted Grey Ware indicated that the site may have been occupied first in the beginning of the first millennium B.C., but subsequent excavations yielded no evidence of habitation prior to third-fourth centuries B.C. The Painted Grey Ware is the pottery of grey colour painted with linear and dotted patterns in black. It is wheel-made, thin-sectioned and well-fired, the more common shapes being bowls and dishes. It is dated to about 1100-600 B.C. and is associated with the sites mentioned in the *Mahabharata*. At this excavated site, one can view the remains of the successive settlements from the Mauryan period to the nineteenth century in a continuous sequence.

F.R. Allchin, a British archaeologist, said with justified excitement: 'It was as if the pages of a history book were being opened one by one.'

As a result of this excavation, the antiquity of Delhi has been traced to the beginning of the first millennium B.C. Delhi, which is situated at the head of the Aravali range dividing the water-courses of the Ganga and the Indus river-systems, can now boast of this antiquity, with continued occupation, as very few capital cities can do.

Let us now describe some of the finds from this excavation undertaken by the Archaeological Survey of India. It is interesting to note that up to the eighteenth century, the artefacts unearthed were usually regarded as the tools of dwarfs and witches. Artefact is a general term for any one of the things made by man.

From the Mauryan Period (*circa* third-fourth centuries B.C.) level were found punch-marked coins, a fragment of a delicately carved stone ring showing what is probably a mother-goddess, and typical grey terracotta human and animal figurines, including a horse and rider with armour. Ovens and terracotta ring-wells were also found.

From the Sunga Period (*circa* second-first centuries B.C.) level have been unearthed terracotta plaques depicting demons and gods including a female playing a flute.

From the Saka-Kushan Period (*circa* first-third centuries A.D.) level were found coins of the Kushan and Yaudheyas. Baked bricks used for building houses were also unearthed.

From the Gupta Period (*circa* fourth-sixth centuries A.D.) level was found the gold-plated coin with an archer on the obverse and the legend Sri Vikrama on the reverse.

From the post-Gupta Period (*circa* seventh-eighth centuries A.D.) level were unearthed terracotta figurines, beads and a piece of fine but damaged stone sculpture.

From the Rajput Period (*circa* ninth-twelfth centuries A.D.) level were found coins, terracotta figurines and an earthenware jug containing copper bells, rattles, pieces of coral and two beads.

From the Delhi Sultanate Period (*circa* thirteenth-early sixteenth centuries A.D.) level were found two varieties of glazed ware.

From the Mughal Period (A.D. 1526 — nineteenth century) level were unearthed beautifully decorated grey ware jars of eggshell-thin fabric, fragments of Chinese celadon and Chinese porcelain. The rare and beautiful pieces of Chinese porcelain belong, according to inscriptions, to the Cheng Hua era (1465-87 A.D.) of the Great Ming Dynasty. Another interesting find was a wine glass of exquisitely delicate — it is almost translucent — workmanship.

Whatever relics were found in recent excavations were classified and displayed in the site-museum at Purana Qila. The finds on view make an interesting collection, throwing new light on the life and habits of our forbears.

Taxila

One of the chief cities of ancient India, Taxila was the capital of eastern Gandhara It is situated 32 km. north-west of Rawalpindi in West Punjab (now in Pakistan). The name of the place in Sanskrit is Takshashila. The Greeks, who came to India in 326 B.C. with Alexander the Great, called it Taxila; this name has become popular and includes the remains not merely of the city that existed in Alexander's time but also, loosely, of the successor-cities and all other ancient establishments within a radius of 8 km. of that city. Even at that time, it was renowned as a political centre and seat of learning.

The ruins of Taxila consist of three city-sites — Bhir Mound, Sirkap and Sirsukh — and numerous isolated Buddhist monuments spread all over the valley, some being near the cities. These Buddhist remains, which are of varying sizes and importance, are self-contained units of the requisite buildings, chiefly *stupas* and monasteries. The more important among these are the Dharmarajika complex and those at Sirkap, Kalawan, Mohra-Moradu, Pippala, Jaulian and Bhamala — all, except the Dharmarajika which had its nucleus going back to the days of Ashoka, dating from the first to the fifth centuries A.D. The establishments flourished largely on the economic prosperity of the cities.

Bhir Mound and Sirkap have been extensively excavated. Bhir Mound, the earliest city-site, which had its origin in about the fifth century B.C. and continued to be occupied for about three centuries, saw the invasion of Alexander. The town had no systematic town-planning, the houses, all of rubble-masonry belonging to three to four periods, being jumbled up and not always with definite boundaries. A notable architectural feature was rough

masonry pillars piled up inside some rooms to hold the roof. A large number of narrow soak-wells, a few of them packed with carefully-laid pottery jars, all turned upside down, were met with. Another kind of soak-well was constructed of large jars set one above the other with a hole in the bottom of each.

A. Ghosh writes: 'Bhir Mound yielded, among other objects, a good number of cut gems and a few hoards of jewellery, one of which contained, besides gold and silver ornaments, over a thousand silver coins, including two tetradrachms of Alexander the Great and a stater of Philip Aridaeus. Native coinage on the site included, besides uninscribed cast coins and square and round punch-marked coins, a large number of bent-bar punch-marked coins, which were characteristic of the north-western regions.'

The second city, Sirkap, separated from Bhir Mound by a small stream, succeeded Bhir as the capital under the Indo-Greeks in the second century B.C. and continued to be in occupation for the next four hundred years or so under the Sakas, Parthians and early Kushans. In the second century B.C., it had a mud rampart all around. In Parthian times (first century B.C.) the northern part of the city was abandoned, and there was a simultaneous southward extension to include the high ground on the Hathial spur within the city. The new fortification, this time of rubble masonry, which was provided at irregular intervals, was most probably built by Azes I, an Indo-Parthian ruler. According to common belief, his reign began in 57 B.C. There is evidence that the southern portion of the new city was fenced off to form a citadel (Marshall, *Taxila,* Cambridge, 1951).

A. Ghosh proceeds: 'The extensive excavations at Sirkap during 1912-35 revealed a well-laid city with a long central street flanked on either side by "insulae" of residential blocks and sometimes of religious edifices. The main lay-out of the city, as excavated, dated from Parthian times. While the main palace may have been situated in the unexcavated citadel mentioned above, one of the excavated blocks outside the citadel, with substantial masonry, elaborate planning and inner and outer courts, had every justification of being regarded as a palace, if a subsidiary one. The other residential buildings were much more modest and, in spite of a variety of plans, had the common feature of one or more quadrangles surrounded by chambers. The masonry was partly rubble and partly diaper — a new development.

'A large area in the north-western corner of the fortification was explored down to the natural soil. The buildings were found to belong to six structural periods, of which the lowest two were ascribed to the Indo-Greek period.'

Of the many and various finds from Sirkap, mention may be made of large hoards of gold and silver ornaments and silverware. The extensive coin-collection comprised punch-marked, uninscribed cast, Indo-Greek, Indo-Scythian, Indo-Parthian and Kushan types. It may be mentioned that the stratigraphic evidence of the coins established the priority of the Kadphises group of Kushan kings to the Kanishka group and thus finally settled a point disputed by historians.

The pottery of Sirkap, compared with that of Bhir Mound, was more developed and sophisticated and was characterized by the frequent use of utilitarian devices such as pinched lip, handle, spout and stable vase — including ring — or pedestal-base.

Among the religious buildings inside the fortified area were a *stupa* and a monastery situated on the Hathial spurs, the former believed to commemorate the tragedy of Kunala, a son of Asoka (273-232 B.C.), but dating in its present form not earlier than the third century A.D. It rests on a high rectangular base

rising in three terraces. Tradition avers that the beautiful eyes of Kunala aroused the guilty passion of his step-mother, Tishyarakshita. Being enraged by Kunala's rejection of her overtures, she swore to take revenge on him. When the prince was away in Taxila to quell the outbreak of a rebellion there, the queen contrived to send an order bearing the impression of Asoka's seal to put out the eyes of the virtuous Kunala.

Sirkap was deserted some time in the second century and the city was now transferred to a site about 1.6 km. further north. Sirsukh, the third and last Taxila, has not yet been excavated. It is known, however, that the fortification of diaper-faced rubble here had semi-circular bastions and contained loop-holes for the use of defenders. Like the other monuments of Taxila, Sirsukh fell before the onslaught of the Huns in the second half of the fifth century A.D.

Prof. Ahmad Hasan Dani in *The Historic City of Taxila* (1986, Paris and Tokyo) has tried to present a new picture of the rise and fall of the historic city of Taxila from prehistoric times to the last days of the city's glory. He has interpreted the data through an anthropological-historical approach and has attempted to place Taxila in the wider perspective of Asian history. Taxila emerges as a typical South Asian city in the Indus Valley on the trans-caravan routes of east and west, originating with humble prehistoric beginnings, later in history participating fully in the Asian human drama, and itself contributing Gandhara art and civilization to man's legacy. This is a picture that arises from explorations and excavations, but goes beyond them to present, for the first time, a global view of the historic city as it developed in the mingling of men and women from east and west. Taxila exemplifies a panorama of humanity that has been full of life, activity, idealism, and the struggle for ultimate goals. The silent remains speak for themselves and bring into view what was once the glory of Taxila.

Arikamedu

The city-site at Arikamedu, near Pondicherry on the tropical Coromandel coast, attracted the attention of the French authorities of Pondicherry, particularly for its yield of objects with Roman affinity, including intaglios and pottery. As little definite was known about the early historical archaeology of south India, the discovery of such objects promised to be of great importance in dating associated Indian objects. The Archaeological Survey of India conducted a short but intensive excavation here in the burning months of April, May and June, 1945, with remarkable results.

Sir Mortimer Wheeler writes in *Ancient India,* No. 2, 1946 (p. 2): 'The special value of the site lies in the fact that, in addition to being an Indian town and port, it was also a centre of trade with the Graeco-Roman world, and the relics recovered from it include pottery and other objects of known origin and date from the much-studied Mediterranean area. The associated Indian culture is thus dated with precision, and thereby achieves the distinction of being the first ancient Indian culture to be dated archaeologically in the Indian peninsula. In effect, the site is culturally a "bilingual" one; the unknown local culture is dated from the known foreign culture, just as Egyptian hieroglyphs were partly deciphered from the parallel Greek version on the Rosetta stone, or Kharoshthi from the bilingual inscriptions on Indo-Bactrian coins. It is not, of course, claimed that Arikamedu will in any sense rival the far-reaching historical importance of the former of these analogues; but in its way it will have a significance of a comparable kind. For the first time, it provides a firm datum line from which the classification of pre-medieval south Indian cultures

can begin. Already sites in the Chitaldurg district of northern Mysore take the Arikamedu chronology half-way across the peninsula, and incidentally hold out the possibility of stratigraphical contacts with an adjacent megalith-culture; whilst these sites in turn link up with others in the southern part of the Bombay Presidency, and so carry the chain of evidence from sea to sea. To the north-east analogies noted at the famous site of Amaravati bring a capital city of the Andhra country within our compass. It may be prophesied that future work, planned methodically and executed with discrimination, will quickly establish the widespread usefulness of the three months' digging carried out last year at Arikamedu.'

A large warehouse, built in about A.D. 50, came to light in one of the two sectors excavated; in the other were noticed four levels of successive structures, which included a courtyard with two small tanks, both believed to have been used in the preparation of muslin exported from India.

The broken bits of pottery revealed, however, Roman wares of two categories which occurred almost through the entire span of occupation, from the close of the first century B.C. to A.D. 200. These were the two-handled amphorae, intended to contain wine or oil, and the smooth-surfaced wide dish with concentric bands of a rouletted pattern, which has come to be known as Rouletted Ware. The pattern and technique of the latter were definitely importations, though not necessarily the specimens found. A third ware was more limited in duration, between A.D. 20 and A.D. 50. This is a red glazed ware bearing potters' stamps and manufactured in the latter half of the first century B.C. and the first half of the first century A.D. mainly at Arezzo in Rome and hence known as 'Arretine' Ware. Among other imported objects, including earlier finds, were Graeco-Roman gems, some of them with intaglio, a red-ware Roman lamp and Roman glass bowls, occasionally 'pillared' in mould. A. Ghosh, who excavated at Arikamedu, writes: 'All the Roman contacts at Arikamedu point to the first century A.D. as the date of the beginning of the settlement at the place. It was evidently one of the marts on the Coromandel coast mentioned by Roman geographers as carrying on trade with the Mediterranean world, and is very likely to represent Podouke, one of the three eastern ports mentioned in the *Periplus of the Erythraean Sea,* a Roman work of the first century A.D. Apart from being the first identified Indo-Roman trading station, Arikamedu is important for providing data, in the form of datable Roman objects, for dating the mass of Indian objects found in association with the former. The new knowledge about the date of the rouletted dish has already been applied for dating sites situated much further inland, viz., Brahmagiri and Chandravalli in Mysore State, and further north, viz., Sisupalgarh in Orissa.'

Pauni

Pauni, a squalid town in Bhandara District, Maharashtra, has recently been put on the archaeological map of India. Here has been unearthed one of the largest *stupas* of India, much bigger in size than the world-famous Sanchi *stupa.* A *stupa* is a mound or tumulus. On the basis of their contents and purpose, the *stupas* are divided into three broad divisions: (i) *Sariraka* (enshrining the body relics), (ii) *paribhogika* (erected over the objects used by the departed) and (iii) *uddesika* (memorial). As compared to the *stupas* at Sanchi and Bharhut, those at Pauni are over 40 m. in diameter and as such could claim to be the most imposing monuments of the time. The building technique is no less distinctive.

The Buddhist text *Mahaparinibbana-sutta* contains several references to the practice of erecting *stupas* for the dead, the worship of the *stupa* and the list of persons whose mortal remains are to be honoured with a *stupa*. The Great Being had given his consent to Ananda to worship Him in the form of a *stupa*. 'How should we honour the body of the Tathagata?' asked Ananda. 'O! Ananda! You need not engage yourself in worshipping the body of the Tathagata. But you dedicate yourself to the right meaning expounded by the Tathagata as so many Kshatriyas, Brahmanas and householders are doing.'

But Ananda was not satisfied with the answer and put the same question again. Then the Buddha was pleased and replied: 'As they do for the remains of a *chakravartin* (emperor), so Ananda, they should do for the remains of the Tathagata; at the four crossroads similar to the *stupa* they raise for the *chakravartin* should they raise a *stupa* for the Tathagata.'

Pauni has yielded conclusive evidence of a great Buddhist establishment nestling in the sylvan retreat of the Wainganga valley. It has thus established a great cultural link between north and south India, indicating the expanse of Buddhism from Sanchi near Bhopal to Amaravati and Nagarjunakonda in Andhra Pradesh. It has also yielded a number of sculptures reminiscent of the Sunga School of Art. Pauni was under occupation from pre-Mauryan to late medieval periods.

Pauni is 84 km. south-east of Nagpur and about 3 km. south-west of Wainganga, one of the sacred rivers of the Vidarbha region. Local tradition avers that places situated on the 'Purva-vahini Ganga' have a sanctity of their own and Pauni lies within this range.

The name Pauni, according to local tradition, was derived from the mythical king Pawana. Many miracles were attributed to the king. His name was derived from 'pawana' (wind). It is said that he used to leave Paunar in the morning every day to bathe in the Wainganga at Pauni, over 160 km. away, and go to Pohana, a distance of 208 km., to take his food. Thereafter he went another 48 km. to Paunar to spend the night.

Pauni was also known as Padmavati, apparently after the name of the queen. Queen Padmavati is also said to have possessed miraculous powers of walking over lotus leaves in tanks, and of drawing water in unbaked pots by means of a string that had never been twined. Contrary to practice elsewhere, the king and the queen wore simple garments and eked out their livelihood by hard work, according to legend.

Pauni attained prominence all of a sudden in 1968 when a few sculptures and fragments of a massive coping-stone bearing an inscription in Brahmi characters were found near Jagannatha Tekdi. The site was known since 1936 when it was 'protected' by the Archaeological Survey of India. The excavation at Pauni, conducted jointly by the Archaeological Survey of India and the University of Nagpur, under the direction of Jagat Pati Joshi and Dr. S.B. Deo, was spread over two working seasons. The Jagannatha Tekdi was tapped in 1969, while the other two sites, Chandakapura Tekdi and Hardolala Tekdi, were excavated in 1970.

The excavation revealed that the original *stupa* was encased subsequently; the *pradakshinapatha* was also reconstructed, and an elaborate stone railing, with gateways in the four cardinal directions, was added in the last phase. The entire complex had remained a place of worship from the beginning of the third century B.C. to the third century A.D. Some of the pillars unearthed were beautifully decorated, with motifs of lotus medallions, vegetal friezes, human devotees standing in veneration, the figure of Nagaraja Muchalinda, a

procession, the Bodhi tree, parrots and floral friezes. By the third century A.D., this great centre of Buddhism seems to have fallen into ruin.

Excavated evidence tends to prove that right from the times of Ashoka, whose regime saw the spread of Buddhism through the activities of the missionaries and the 'dharma-mahamatras', Vidarbha had its share of Buddhist influence. In the *Puranas,* Vidarbha is stated to be one of the southern States founded by princes of the Yadu line. Many poets, philosophers and administrators were associated with ancient Vidarbha. Kalidasa is said to have composed his *Meghaduta* during his sojourn in Vidarbha when Prabhavati Gupta was the Queen Regent of the Vakataka Kingdom. Bhavabhuti, a famous Sanskrit dramatist, was born at Padampur near Amgaon in Bhandara district. Acharya Nagarjuna, the Buddhist philosopher and founder of the Madhyamika School of Buddhism, is also believed to have been a native of Vidarbha.

A visit to Pauni uplifts the mind and soul. Here we are once again reminded that Buddha had made known to the world the four noble truths and the eightfold path of righteousness. He taught us the sanctity of life and to strive for *Nirvana*, which means self-abnegation, the losing of self in something greater than self, as the ultimate goal.

Nagarjunakonda

'I remember some years ago, when we had a difficult task, almost where a matter of conscience arose before us while we were considering what we should do about Nagarjunakonda in the South. There was this buried city gradually coming out and there was the proposal to erect a dam there and create a big reservoir which would give water to irrigation and other things all round. Here was a direct confict between the claims of today, in the sense of practical utility, and the claims of the past and we were much troubled by it, because, whether we are archaeologists or not, Indians as a rule are a good deal tied up with the past. But ultimately it was, I suppose, inevitable that we decided in favour of the present, even though at the cost somewhat of the past, although when we look more deeply into this matter, that turned out to be the best way of preserving the past also because these old relics at Nagarjunakonda were gradually fading out, crumbling into dust and ashes; and we decided that they should be removed bodily and placed on a little island in the middle of the lake which would not be submerged and preserve them in such a way as really to prevent their decay. Probably that was a better way of even preserving them apart from the other aspect of looking to the irrigation needs of the present.' This is what Jawaharlal Nehru said while inaugurating the Centenary Celebrations of the Archaeological Survey of India in 1961.

The valley of Nagarjunakonda has now been submerged under the vast reservoir of water created by the construction of the world's highest masonry dam, Nagarjunasagar. It was here that the new technique of bodily lifting monuments and re-erecting them on a hill-top, eventually to become an island, was evolved by Indian archaeologists for the first time. A similar method of preserving the archaeological remains was resorted to in the Egyptian and the Sudanese Nubia on the river Nile where the ancient Nubian monuments were threatened by submergence under the Aswan High Dam.

Nagarjunakonda is situated on the right bank of the river Krishna in Guntur District of Andhra Pradesh at a distance of 166 km. to the south-east of Hyderabad and 22 km. from Macherla, the nearest railway station. The Krishna rising in the Mahabaleshwar Hills in the Western Ghats meanders in the lofty hills and green pastures of the panoramic valley of Nagarjunakonda

and provides a rich feast for the eye. The valley covers an area of 15 sq. km., with the Phirangimotu hill on the south, Nagarjunakonda (or Nagarjuna hill) on the north and the river Krishna on the west. The ancient name of these hills was Sri Parvata and the particular hill on which the re-erected monuments and the museum are now located came to be known as Nagarjunakonda in medieval times. An ancient Tibetan tradition avers that the famous Buddhist divine Nagarjuna spent the latter part of his life in a monastery on Sri Parvata. But the hypothetical association of Nagarjuna, the celebrated Buddhist philosopher of the second century A.D., who was the reputed founder of the Madhyamika school and an enthusiastic promoter of Mahayanism, with the hill or the valley has not been established on the basis of either archaeological finds or literary tradition.

Nagarjunakonda is one of those sites in India where the excavated remains have revealed a continuous story of Man from the prehistoric times (Early Stone Age) to the historical periods. Here one can see man's march from savagery to civilization, a story spread over thousands of years. There are indeed few sites in the world which can be compared with Nagarjunakonda, where history speaks through the ages.

The discovery of the remarkable site of Nagarjunakonda was made by A.R. Saraswati of the Archaeological Survey of India in March 1926. The site had partly been dug from 1927 to 1931 under A.H. Longhurst. A bone relic, which was, in all probability, a bodily relic of the Sakya sage, Gautama Buddha, and which was unearthed in a *stupa* at Nagarjunakonda, was presented to the Mahabodhi Society of Sarnath by Daya Ram Sahni, the then Director General of Archaeology in India, on December 27, 1932. We should not wonder at the discovery of such a relic at Nagarjunakonda, for other authentic relics of the Blessed One were found in 1982 in a *stupa* at Bhattiprolu in the same district. Though T.N. Ramachandran carried out an excavation here in 1938, the site offered much more possibilities to excavators. Therefore, when the plan to convert the valley into a reservoir was decided upon, the Archaeological Survey of India made a determined effort to salvage the stupendous archaeological remains forestalling the impending archaeological tragedy. For six years commencing from August, 1954, extensive excavation by the Nagarjunakonda Excavation Project under Dr. R. Subrahmanyam exposed more than a hundred sites throughout the length and breadth of the valley ranging in date from Early Stone Age to the late medieval period. A total of nine monuments, some of them of gigantic proportions, have been rebuilt in their original form and alignment in order to reconstruct the essence of the architectural tradition, and fourteen large replicas of excavated remains are displayed in the open air in two clusters on the Nagarjuna hill. Inside the Archaeological Museum may be seen models of 38 excavated sites, arranged around a miniature valley.

Dr. H. Sarkar writes: 'Nagarjunakonda was the venue of successive stone-age cultures right from the early palaeolithic age. As is well known, the early palaeolithic people were food-gatherers living almost in a sub-human state of existence. Several such groups, some two hundred thousand years ago, trekked the valley in their quest for food. They used crude stone tools like hand-axes, points, cleavers, scrapers and so on made out of quartzite pebbles. These artefacts belong typologically to a wider peninsular complex known to archaeologists as the Madras hand-axe industry. The remains of the succeeding stone age are tools like blades, points or arrow-heads, and scrapers made either of quartzite or jaspery chert. These tools are smaller in size than those of early palaeolithic times, and the technique employed in their

manufacture shows a marked advance over the earlier tradition. Yet the economy of these people remained that of hunters and food-gatherers. In the next stage, mesolithic, the technological development in the manufacture of stone tools was considerable. Various harder materials like quartz, rock-crystal, agate, chalcedony and chert were utilized to make delightful shapes, some of them conforming to geometric forms like triangles, trapezia and lunates. The tradition was clearly dominated by the use of tiny tools, generally known as microliths. More than one microlith-using people have left their vestiges in this valley. Their remains may broadly be divided into two categories: those indicative of an industry with a pronounced non-geometric tradition and those others influenced by a geometric tradition. But the excavations at Nagarjunakonda failed to throw any light on the dwellings of these stone-age people which, in all likelihood, continued to be natural shelters or crude temporary structures.

'Nagarjunakonda was on the threshold of the neolithic revolution some time in the third millennium B.C. People living in the valley acquired the technique of carpentry, a rudimentary knowledge of cultivation, the art of domestication of animals and the potter's craft. They were not entirely dependent on nature's gifts for the supply of food. This obtained in the most evolved neolithic phase of Nagarjunakonda, which was preceded by at least two earlier stages. From the evolved phase we have an abundance of animal bones suggesting that large herds of cattle — including the ox, buffalo and goat —were maintained by the people. Similarly the hunting and fishing habits of these people are attested to by the occurrence of bones of spotted deer and fish. The discovery of a small fragment of copper from a pit of this phase shows that they had some knowledge of the use of metals as well. Disc-beads, made either of shell or steatite paste, and a bead of jasper indicate the prevalence of finer craft at the same time. That a great deal of development took place in the potter's craft is apparent from the overwhelming quantity of burnished grey ware. In shape this ware has great variety, which might have developed in response to increasing functional needs. The neolithic settlement here also depended on cultivation, as suggested by the use of digging implements such as shoe-last celts (also used in the neolithic cultures of Europe), long weeding hoes, picks with twin working edges, and elongated celts. Equally notable was its achievement in carpentry, involving use of tools like axes, adzes, chisels and axe-hammers. During the period, microliths, some of them exquisite examples of neolithic workmanship, were made entirely from rock-crystal. The people then lived in houses built on earth-fast poles, each house enclosing one or two pits, meant probably for underground storage. Semi-subterranean dwellings were used by certain groups in the same period.

'The neolithic people of the evolved phase were no longer nomadic, for excavations at Nagarjunakonda revealed a neolithic cemetery with two strata of burials. While the early group practised complete extended inhumation burial, the later people performed both extended inhumation and post-excarnation burial. Two instances of joint burial, each grave containing the skeletons of an adult male and an adult female, came to view. Children were interred in the cemetery, while infants were buried in urns within the habitational area after a process of exposure. Grave-goods in the cemetery were exclusively pots of burnished grey ware, mostly with spouts.

'The culture that followed the neolithic phase at Nagarjunakonda, possibly after a considerable interval, is represented by two groups of sepulchral monuments, known to archaeologists as megaliths, of the second

half of the first millennium B. C. In outward appearance, the megaliths of this valley were all stone circles enclosing heaps of stones, below which lay the underground houses of the dead either in the form of simple pits or buried cists, the latter made of dressed stones. All the tombs here did not yield human remains, perhaps because post-excarnation burial, that is, burying a few bones of the dead collected after exposure of the body, was the dominant practice. Two examples of complete inhumation burial were also brought to light and in both cases the remains were of adult females. In pits or cists, the skeletal remains of more than one individual, often huddled together, were inhumed, generally with heads to the north. In total, nineteen individuals were recovered from fifteen megaliths, of which nine yielded skeletal remains and the remaining six either splinters of bone or no human bones at all. At least five women were buried in different megaliths of Nagarjunakonda, while the male population, excluding two children, was represented by at least twelve skeletal remains.

'All the megaliths yielded burial goods in the form of numerous pots and iron objects, the latter indicating the warlike habits of the megalith-builders. A pair of gold spiral earrings and a necklace with gold and silver beads came from a megalith which contained a female skeleton. The funerary architecture of the people shows that they were quite adept at working on stone. It was these people who introduced iron in the valley and the characteristic black-and-red ware, so called because the pots are black inside and at the rim, and red on the outside. Their elaborate funeral rites, including animal sacrifice, were evidently practised over a particular period and suggest a deep reverence for the spirits of the dead and a strong belief in life after death.'

In the historical period (first century A.D.), Nagarjunakonda was under the Satavahanas ruling from Dhanyakataka (Dharanikota) near Amaravati in Andhradesa. Later, the Ikshvakus (third century A.D.) held sway here. Their capital was Vijayapuri. The Ikshvakus have been credited with the construction of many religious edifices such as Brahmanical and Buddhist temples, *stupas,* monasteries, etc. 'But the aura that Nagarjunakonda has around its name,' writes Sarkar, 'is all due to the brilliant records of achievement accomplished during the short rule of the Ikshvakus, who claimed descent, possibly to raise their status in the eyes of the people, from the mythological Ikshvakus of Ayodhya. Never before nor afterwards did the valley witness such a spectacular growth as the seat of a government, as an atelier of art and the important centre of Buddhist and Brahmanical faiths.' The reign of Vasishthiputra Ehuvala Chamtamula, son and successor of Virapurushadatta, which lasted at least twenty-four years, was the golden age of Nagarjunakonda. During this period, structural activities and artistic pursuits reached their zenith and the cause of Saivism was better served than under any other Ikshvakus king. The Sarvadeva temple (the abode of all gods), the Pushpabhadrasvamin temple and the shrine of Nodagisvarasvamin, which are Saiva structures, were built during his rule. Similarly, all the evolved Buddhist monastic establishments with the best sculptural representations of the time were the products of this period. After the Ikshvakus, Nagarjunakonda by itself had no separate history but formed part of the kingdom of later rulers like the Vishnukundins, Pallavas, Eastern Chalukyas, Kakatiyas, Reddis, Golconda Nawabs, etc.

Of the monuments faithfully re-erected or transplanted on the Nagarjuna hill, mention may be made of megalith I, Site 44, monastery, Site 4, apsidal shrine, Site I, tank presumably for *asvamedha,* Site 93, *stupa* with swastika inset, Site 59, and the Bathing Ghat, which was a wonder of Ikshvaku

architecture. This gigantic *Ghat*, though built about 1700 years ago, is superior even to many modern bathing-*ghats* on the banks of the rivers of India. Even after replantation, the *Ghat* has been so placed on the periphery of the island that children may frolic about with the lashing waters in the same way as was done by the ancients in the original setting. On the eastern bank of the reservoir may be seen the reconstructed monasteries, a temple, the so-called Hariti temple, and an amphitheatre — with a tiered gallery on all the four sides —which provided seating room for about a thousand spectators. This amphitheatre is obviously modelled on the great open-air theatres of Greece. Prof. Humayun Kabir visited Nagarjunakonda in 1951 and one of the things which struck him most was this amphitheatre, which had some acoustic properties indicating thereby that it was meant for musical or dramatic performances. The amphitheatre could have been used for sports also because many sculptural representations of wrestling scenes were found here. It was this theatre which inspired Humayun Kabir to build Rabindra Rangshala, an open-air theatre, in New Delhi on the occasion of the Tagore Centenary.

All the interesting remains in the valley, unfortunately, could not be reconstructed on the hill-top, although replicas of some structures like the Karttikeya temple, the Sarvadeva temple (the abode of all gods), the Pushpabhadrasvamin temple, the Burning Ghat and tanks, supposedly for *asvamedha,* exhibited there furnish an idea of their original architectural wealth.

At the Nagarjunakonda hill-top, we have the first and only island-museum of India. The museum on the hill-top, which is surrounded by deep waters all round, is picturesquely located. 'The opening of this museum,' observes Sarkar, 'marked the realization of Pandit Jawaharlal Nehru's noble idea of combining, at the same place, Science and Technology, here represented by the giant Nagarjunasagar Dam, with the heritage of India as embodied in the Museum.' In order to get to this museum, the visitor has to go to the Nagarjunakonda ferry point called Anupu. From there, after a 25-minute motor-launch cruise on the waters of the Krishna, he reaches the hill-top where the museum is located. The museum built in 1966 has a rich collection of relics, derived from excavation or otherwise, of all periods which Nagarjunakonda passed through. These remains are representative of the prehistory, proto-history and history of the whole region. The art-objects displayed in the museum speak highly of the anonymous artists.

The museum has three galleries. In Gallery 1, the visitor may see prehistoric and proto-historic objects, choicest ornaments, jewellery, relic-caskets, sculptured slabs called *ayaka-patas*, a moon-stone or semi-circular door-step, beads and coins (including issues of the Roman empire with which India had brisk trade in the early centuries of the Christian era). On an *ayaka-pata* have been depicted gods carrying away in procession the relinquished crown of Gautama at the time of his Great Renunciation. A cornice-beam depicts the events in the life of the Buddha, the Enlightened One. The most attractive exhibit of the gallery, however, is the figure of a standing colossal Buddha, 4 m. high. The image stands in frontal pose holding the hem of his garment in the left hand, while the right hand, now broken, is granting protection.

In Gallery 2, the well-known life-scenes of the Buddha, starting from the prediction of Dipankara Buddha that Brahmana Sumedha would appear as Gautama, the Buddha, to the attainment of *parinirvana* by the Buddha at Kusinagara, are on view. In the northern wing of this gallery, sculptures depict the *jatakas* or the stories of the previous births of the Buddha. The *Mandhatu*

Jataka is also elaborately depicted. The moral of this *Jataka* is that avarice has no limit and pride has its own fall; even by a rainfall of gold-pieces will wishes not be satisfied and the evil desire to expel Sakra and take full possession of the throne brought about Mandhata's downfall. In the centre of the second gallery containing the model of the valley, the visitor may see a small-scale replica of the submerged valley and its surroundings.

In Gallery 3 on view are miscellaneous Ikshvaku carvings, inscriptions and medieval sculptures.

Happily, the Krishna does not submerge beneath its waters today all the marvels which we have inherited from generations long since vanished. When a thing of beauty, whose loveliness increases rather than diminishes by being shared with the rest of the world, is saved, all men alike stand to gain.

Peddavegi

Peddavegi, ancient Vengi, 12 km. north of Eluru town, District West Godavari of Andhra Pradesh, was a well-known capital city of the early dynasties like Salankayana, Vishnukundin and Chalukyan that ruled Andhradesa from the middle of fourth century to eleventh century A.D.

During 1985-87, the Excavation Branch I, Nagpur, of the Survey under the direction of Dr. I.K. Sarma assisted by G.V. Sreenivasa Rao, S.K. Lekhwani, J.N. Gandhi, Mohinder Singh, M.U. Qureshi and others undertook digging at three places: (i) PVG-I Dhanamdibba site literally mound of wealth, (ii) PVG-II the Paramesvara temple and (iii) PVG-III west of the village across the fortification. Three phases of cultural activity, all assignable to the early historical period, were brought to light. There was a continuous occupation of the site and the dating of the three phases was based on the associated structural, sculptural, numismatic and cult objects. Thus Phase I-A was that of the Salankayana times, *circa* 4th to 5th century A.D., Phase I-B Vishnukundin mid-5th to the end of 6th century A.D., and Phase I-C Eastern Chalukyan, end of 6th and early 7th century A.D.

The Salankayanas and Salankayanka, i.e. the country of the Salankayanas, were first mentioned by Panini (6th century B.C.). It is certain that Salakenoi was governed from Vengi as early as A.D. 140 as attested by Ptolemy who mentioned the place along with other important port towns such as Maisolos (Machilipatnam), Koddura or Kuduru (Guduru) and Kantakossyla (Ghantasala), on the eastern seaboard. All these places were strongholds of Buddhism and humming with merchants from eastern as well as western countries. From a newly discovered inscription on a sculptured pillar part, we learn about one Salankayana minister named Bhutila stationed at Kausambi (U.P.). Samudragupta, the Imperial Gupta King, mentions Vaingeyaka Hastivarma (I), among the rulers subjugated by him in the Andhra country. Salankayanas rose to power immediately after the fall of the later Satavahana and Ikshvaku dynasties and made Vengi their seat (*adhisthana*). Hiuen Tsang (A.D. 639-40), the Chinese pilgrim, refers to Ping-ki-Polo (Vengipura) as the capital city in Antolo and speaks of a stupa built by Asoka Maurya at this place.

Robert Sewell was the first to visit the place in A.D. 1888 when the ancient mound of Dhanamdibba, north of the village, was being dug out by the local people. He noted that "the centre of this mound had not been dealt, and if, as appears, this is a stupa, the relic casket may still be there." Alexander Rea (1902) listed several ancient places here for protection.

The excavator in his paper, 'New Light on Vengipura: Excavations at the Ancient Historical City of Andhradesa', published in *Puratattva*, No. 17, (1986-87), has summarized the results of the excavation as under.

A. PVG-IA : STUPA AT DHANAMDIBBA

A massive structural complex of bricks was exposed in the centre of the mound PVG-I, which is identified as a stupa with an entrance porch towards east. The unit consists of a solidly built brick stupa at the centre over a square platform measuring 12.90 m. and preserved to a height of 1.75 m. The basal plan at the dome part is squarish on plan and measures 10.70 m. It resembles the chaitya of Ghantasala in its central layout of bricks in a stepped pattern; the bottom-most cube being 3.06 m. An inner circumambulatory passage 45 cm. wide was provided around the dome, whereas the outer *pradakshinapatha* was 2.40 m. wide around the drum which measured 12.90 m. square, and preserved to a height of 1.75 m. only. The dome exterior appears to have been originally encased with sculptured limestone slabs and stucco work which according to Robert Sewell were removed by local people, but the drum appears to be plain. The extant height of the dome works out to be 1.20 m. while its diameter is 10.70 m. Originally, it may have risen to a height of 13 m.

At the four corners of the *prakara*, rectangular chambers or platforms 2.70×2.25 m. were built in phase IB. These chambers appear to take the place of *ayakas*, a characteristic feature of the Andhra stupas. Further, the stupa-complex has an elaborate entrance porch at the east measuring 8.30×4.5 m. with stepped *sopana* and moonstone descent marking the threshold. In its central layout, the Peddavegi Stupa resembles the *mahastupa* of Ghantasala, District Krishna, excavated by Alexander Rea. A four line inscription in Brahmi characters of 4th century A.D. on an octagonal *mandapa* pillar in fact refers to a person hailing from Ghantasala aligned to the *aparasaila* sect, who perhaps caused the *mandapa* pillar to be erected. The lotus medallions on the pillar sections and the characters of the record clearly suggest a post-Ikshvaku date to the monastic order of Peddavegi. In fitness of things the stupa here, like the one at Ghantasala, belongs to Aparamaha Vinaseliyas, a dominant sect based at Sri Parvata (Nagarjunakonda). Basing on the earlier notices of Sewell, further digging was planned to record the foundational pattern and to ascertain if any relic is placed at the centre. Systematic removal of the brick courses was undertaken. In all, twenty-six brick courses were carefully removed at the central part of the structure right up to its base. It was found that the earliest brick work was laid on a raised platform 1.18 m. high comprising eight layers of river sand, rolled stone and silt packed in perfect horizontal bands. This foundation was limited to the *medhi* (drum) part only because of the superload whereas at the outside, the enclosure wall and *pradakshina* floors in between, were freely built over a levelled ground.

The associated finds include, apart from pottery wares, a meagre quantity of decoratives like stucco flowers, a limestone plaque depicting Srivatsa, a Nandi in a bas-relief panel and human face, beads and ear-ornaments, etc. The stupa-complex appears to be the work of the Salankayana ruler, possibly Nandivarman-II (A.D. 400-430), who according to a pillar inscription from the nearby Guntupalle caves (27 km. north of Peddavegi) is reported to have caused certain major donations to the Buddhist *viharas* while ruling from the victorious city of Peddavegi in spite of his being a Paramabhagavata and devoted to Chitraratha Svami.

B. PANCHAYATANA-COMPLEX PHASE-IB

Trenches were laid north of the above stupa-complex. They revealed an extensive brick structure, rectangular on plan and measuring 19.40×176.0 m. with the main entrance eastwards. The common *adhisthana* has an impressive *jagati* and *tripatta kumuda*, out of cut and chamfered bricks, to a height of

0.75 m. The *kumuda* is bound by *urdhva* and *adhah padma* decor and plastered uniformly to impart a *padmadata* look. The bricks are of the size of 42×21×8 or 37×18×7.5 cm. with a fine joinery. The side wall is extant to a height of 1.6 m., this height was not achieved in one phase but was the result of two distinct phases of structural activity. The topmost (Phase IC) wall is a jerry-built one above the *padavedi* of phase IB. This upper phase coincides with the addition of limestone *pranalas* at the southern side of the two (south-west and south-east) shrines.

The south side of the *panchayatana* is better preserved to a height of 2.35 m. than its northern counterpart. Niches are seen at regular intervals enhancing the elevational grandeur. These niches possessed *kudya stambhikas* of circular form made of neatly chamfered bricks. They seem to be empty sham niches but the *bhitti* was well-plastered and finished.

The niches at the northern face are heavily damaged but measured 1.40 m. wide and like those at the southern face are regularly spaced. In the western side, they are 98 cm.wide and at irregular intervals while at the eastern face they are 60 cm. wide and flanked the main entrance; two on either side of the balustraded descents. On the basis of the layout and elevation of the structure, the number and placement of the wall niches (*bhadra koshthas*), the complex appears to possess four shrines at the four corners while at the centre a stepped-well with a shrine was present. The shrines are approximately identical in size, and rectangular in shape. The central part was found very much damaged by the brick-robbers. None of the shrines yielded any image and the associated religious cult to which this *panchayatana* can be exactly assigned is not certain. The addition of stone *pranalas* to two shrines at the south indicates the observance of *abhisheka* ritual. As a result of deep digging at the Trench YA I Qdt. 3, the earliest phase of this *panchayatana*-complex was found to be coevel with the phase of the stupa. The brick *prakara* wall at the northern side of the stupa was in fact given a facing of dressed sandstone blocks externally all through. This was apparently caused to protect the wall as a drain was provided along the outer periphery of paved brick floor of the *panchayatana* which served as a *pradakshinapatha* to a width of nearly 2 m. on all sides.

C. PVG-II : PARAMESVARA TEMPLE AREA

At the southern and eastern precincts of this temple, excavation was undertaken to ascertain the cultural sequence. Remains of two brick temples were traced below the stone temple of Paramesvara. These brick temple units, three in all, face west and on plan possess a square *garbhagriha*, an *antarala* and a *mandapa* in front. Around each unit was a *pradakshina* 1.20 m. wide. Post-holes in the shrine wall indicate a thatched roof on wooden posts above the wall. These brick shrines are of Vishnukundin period while the Paramesvara temple is of later Chalukyan date (10th century A.D.). In the upper levels, apart from the disturbed stone sub-plinth of Paramesvara temple, floral as well as figure parts of stucco work over the exterior of the stone wall were recovered.

D. PVG-III : FORTIFICATIONS

A detailed surface examination and study of the ancient vestiges at this place revealed extensive ruins, including a fortified township encompassing the nearby hamlets to an extent of approximately 6 sq. km. Several ancient spots and mounds were dug out by the local people and deep pits within the village habitations and outside stand witness to the destruction of this famed city.

The gravel fortifications called *kotadibbalu* encircle an area of one sq. km.

These walls have been largely levelled up except at the west and partly southern extents. Identical images of Kalabhairava were found at the north-east and northern boundaries of the fortifications. Though disturbed from their *in situ* positions, these are valuable examples revealing the cult during the early Chalukyan times. The images are nude, two-handed with *khadga* and *churika* in both the hands and with *sarpalankaras*. They served as the guardian deities (*Kshetranampatayah*) of the city of Vengipura.

EXCAVATION ACROSS THE FORTIFICATION

A vertical trench across the gravel fortifications extant at the western part was undertaken. The gravel make up of the fortification wall was to a thickness of 7.10 m. above the first working level in distinct stages. A levelled ground was noted at a depth of 2.35 m. marked by burnt hearth over a mud floor. Apart from red polished ware, a miniature image of limestone and an ivory pendant were found on this floor level. It appears that the workmen at the fortifications temporarily camped at the spot. A brick veneer is also found at this level along the western edge of the bund. Trial trenches were sunk at either ends of the gravel bund. A moat with silt and water-borne layers was traced at the western extent of the fortifications. Brick alignments indicating postern gateways were traced on the surface of the north-west and southern parts of the fortifications. The brick size and the pottery clearly indicate that the fortifications were caused during the Salankayana period and continued to be in use and perhaps strengthened during the subsequent phases.

II. IMPORTANT FINDS

Among the objects recovered from the digs are two limestone pillar parts, one from Trench YA-1, Qdt. 3 and another from Trench ZA-1, Qdts. 3 and 4. Both measured 1.52 m in length and were found along with the disturbed brick courses seemingly fallen from the wall along with the collapse of the structure.

1. INSCRIBED *PRANALAS*

They are originally sculptured pillars of limestone with mid-octagonal sections marked with lotus medallions and running animal frieze at the terminals. Such pillars originally belong to a Buddhist *mandapa* but were reused here as water-chutes (*pranalas*) by cutting a channel along the shorter sections mounded to resemble an elephant's trunk (*gaja sundas*).

Both the *pranalas* revealed on their broader sections Brahmi inscriptions in 2nd century A.D. characters. The first one from Trench YA-1, Qdt. 3 has only two letters, reading Daksha standing perhaps for the name of a carver. The second example is far more important as it revealed two records on both its wider faces. We come to know for the first time a king named Kakichi (*Rajno Kakichikaya maḥa rajasa*) and cites certain monks and nuns connected to Maha-Nagaparvata, i.e., the hill monastery of Guntupalle which is 27 km. north of Peddavegi. In the second record, this very king is stated to be a monk internee (*antevasaka*) at the Buddhist *sangha* of the place. It might be noted that no Buddhist structure assignable to second century A.D. was found at Peddavegi and the Stupa exposed at Dhanamdibba cannot be pushed to a date earlier than mid-4th century A.D. *The Asokan stupa referred to by Hiuen Tsang has not been located anywhere among the Peddavegi ruins*. The above inscriptions and the sculptured pillars no doubt push back the antiquity of Buddhism to early centuries A.D. However, the associated structures wherein these sculptured pillars were reused as water-chutes belong to beginning of Phase-IC, dated to the end of sixth and seventh century A.D. Who was this king named Kakichi?

Is he in any way connected to the toponym Kakinada? Do we have in him the origin for the later dynastic name Kakati?

2. A CARNELIAN INTAGLIO

Assignable to Phase-IA is a unique find of an intaglio measuring 2×2.6 cm., ovalish in shape and 4.4 mm. thick. This appears to be royal seal. This precious object was found at the south-west entrance of a cut-stone veneered building within the inner city wall. A circular or elliptical shrine was partly exposed at this spot and during clearance operations (PVG 1984-85), this rare object was picked up. Plano-convex in section, over its reddish broad facet is a female beauty carved centrally in linear form; the skill, tools and techniques employed are beyond the pale of scientific analysis. The female standing in *abhanga*, facing front is two-handed, the right arm is half-raised and holds a four-petalled lily *(nilotpala)*, with the first finger and thumb. The left hand is at the upper part of the hip *(katisamsthitahasta)*. She has a bejewelled turreted crown over the head. The elongated neck, shapely shoulders strong at the root, sumptuous breasts, slender waist and prominent navel enhance her beautiful stance. She has wide eyes, sharp nose and bulbous cheeks but shapely chin and prominent pout. The most interesting aspect lies in her apparel. The upper silken frock is largely transparent and ends with gems and pearls (*muktas)*, entwined at the terminals. The lower *langa* or trouser-like loose robe made of diaphanous silks has ornamented lace border whose ends are rolled up. The dress and turreted crown recall to mind the female deities depicted on Indo-Scythian or Kushan coins and seals dated to first century B.C. from North-West India. The *kanthikas* in the neck and the *chakra kundala* in the right and the *makara* or *pushpa kundalas* in the left ear, the *bhujakirtis* and wristlets and the slender body closely resembles the female forms on the relief sculptures of Amaravati and Nagarjunakonda. According to Dr. Sarma, 'On the basis of the striking Hellenistic features of the head-dress and attire, the divine form on the intaglio like the Kapisa or Pushkalavatinagara *devatas*, can be regarded as a city goddess of Vengipura, serving both as the protectress of the city (Durga or Amba) as well as the Rajyalakshmi of the Salankayanas of Vengi. It may not be unreasonable to think that this was a legacy from the Gandhara country to south-east India by the royal house of the Salankayanas who had migrated from North-West and rose to power at Vengi.'

3. OTHER ANTIQUITIES

An assortment of limestone plaques with divinities sculptured in bas relief were found from Phase-IA and also early levels of IB. They reveal the existence of popular cults which worship Siva-Sakti, Ganesa, Nagini, and so on as pet gods (*Ishtadevata*). These stone plaques in particular, betray the Ikshvaku art style though smaller in size. They mark the re-emergence of Vedic and Brahmanical cults with gods in human and symbolic forms during the later half of fourth and early fifth century A.D.

Siva-Parvati: A limestone plaque (12×9 and 2.1 cm. thick) showed a seated figure of Siva and Parvati carved in relief. Siva here has the third eye vertically shown between the eyebrows and is seated at ease along with Parvati on a Manchaka *adhishthana. This is the earliest art object depicting Siva-Parvati in human form in south India and clearly anterior to the early Pallava Somaskanda reliefs.* The symbolic-anthropomorphic plaques obtained from Madugula, Kunidene (Guntur district), and Peddamudiyam (Cuddapah district) are later examples in this series.

Pancha Linga: A grey sandstone plaque depicted in deep relief five *lingas* in a

row over a *padmapitha*, emphasizing the symbolic aspect of Rudra as Panchanana or Saranana This might also stand for *Panchavaktra Siva*. The plaque was undoubtedly an object of worship of a Vaidika of Vengipura.

Srivatsa-Sri and Sakti: Other limestone objects recovered from the digs as well as from surface include a *Srivatsa-Sri* with *sakti* or spearhead. This example retains the characteristic features of the *Srivatsa* form depicted on the early Satavahana coins and art objects of *circa* 2nd century B.C.

Mahishamardini: A plaque depicting Mahishamardini in relief is another outstanding cult object from Peddavegi. The figure and the depiction closely recall the Saka-Kushana examples of Mathura. The robust features of the goddess are clearly seen. The *kanthika* worn by her is an *ekavali* of round beads, the prominent *chakra* and *makara kundalas* in the ears and the loose hair arranged centrally on the head and either ends shown as twigs hanging over the ears, and outstretched tongue, round eye balls and bulbous cheeks emphasize the fierceness of the goddess in action. The upper right hand holds a *trisula* topped *danda* which pierces the forehead of the demon Mahisha. The right foot of the goddess is placed on the head while the left is firmly planted on the ground. The lower left hand is picking up the tail of the subdued animal in a realistic way. The lower right hand is at the knee while the left one is holding the *sankha*. According to Dr. Sarma, 'The voluptuous yet robust and realistic female form of this goddess recalls to mind the female forms of the local Ikshvaku art.' Another limestone plaque, a broken example, depicts Viras in a row.

Terracotta goddess: Apart form these, a terracotta ovalish plaque depicting a peculiar female goddess with leonine face, snake ornaments (*Sarpabhushita)* and mounted on the hood of a cobra is quite enigmatic and defies proper attribution. The outstretched legs and toes resemble that of an elephant. She holds two lilies (buds) in her upraised hands. These lilies and the voluptuous full breasts emphasize the virgin character of this cult deity. She might be, according to Dr. Sarma, a Nagini or a Prithividevata, a cult which appears to be alien to the Vengi region.

The above mentioned cult objects bring to the fore the need to document carefully the post-Ikshvaku non-Buddhist art relics. The excavator observes: 'The above pieces throw light on the obscure phase of an early Brahmanical religion which survived in Andhradesa despite the prolific Buddhist faith. Although Mahayana Buddhism dominated the art and architecture and spread its creed far and wide, the Vedic and Brahmanical cults did not disappear. The above cult objects from the Salankayana levels at Peddavegi are thus important indicators of the Brahmanical creed.'

Among the minor antiquities of Phase-IA mention has to be made of cubical dice of terracotta, ear-ornaments (*chakra* and *pushpa kundalas*) besides tabular dice and combs of ivory. The latter recall the Kshatrapa Satavahana examples. The pottery right from the earliest levels of Period-IA included only dull red ware, red slipped ware and a few Red Polished Ware sprinklers and cups. There is a total absence of Rouletted and the Black-and-red wares at the site. This then clearly points out that the earliest habitational activity of the historical period within the fortified area is of post-Ikshvaku date. Salankayanas made Vengi their seat of power only from the beginning of the 4th century A.D. and not earlier.

In the next Phase-IB, with the advent of Vishnukundins, the Stupa was relegated to background and emphasis was laid on building Brahmanical

temples of brick and stone. A *panchayatana*, closer to the stupa, was provided with the water-chutes for draining *abhishekajala*. The pottery of the earlier Phase-IA continued but other notable finds which clearly separate the phase from the preceding one are the copper plated circular iron coins of the Vishnukundins besides temples of brick. Foundations of a square *garbhagriha* were brought to light at PVG-I stupa site itself. An upper part of a Harihara image was found within this shrine. The robust face, wide eyes and prominent pout recall the Ajantan images of the Vakataka period. Several other architectural and sculptural components of reddish or buff or soft red sandstone were found.

Baked clay Ganesas: Notable among the cult objects of this phase were the two Ganesa figures of baked clay. Both the examples are identical in size and are in seated posture. The first one is hand-modelled and measures 7 cm. high and 6 cm. wide, has no slip and is somewhat crudely finished. Two-handed with typical elephant head and ears, seated-at-ease on widespread animal hips over a flattish *pitha* which is 7 cm. square, the short stumpy legs of the deity in *archaparyank-asana*, the trunk gently turns to right and touches the object held, perhaps an eatable, in the right palm. The left hand rests on the knee and holds a *modaka*. Except a rolled cloth on the forehead and girdle (*sirastraka* and *vastra-mekhala*), no ornamentation exists. There is no *yajnopavita*. Mouse is also absent. Hence he can be regarded as a Bala Ganesa. There is a mortise hole on the underside of the base extending to a depth of 2.5 cm. This is meant for placing the deity over a pedestal or an upright of wood. The inner roughened part lends support to this surmise. In contrast to this example, the other figure, of the same height and breadth (7×62cm.), has the base of 5.3 cm. square with a mortise hole for mounting it on a pedestal. It has a better finish and is coloured in black slip, all over. Apart from the well marked animal eyes, a decorative cloth cover (*sirastraka*), the elephant ears are shown incised. The circular wristlets (*valayas*) as also the three-stringed *yajnopavita* in the usual *upavita* fashion clearly point out that this Ganesa is a *praudha* whose *upanayana samsakara* was accomplished. Strikingly enough, the toes are elephant-like, the *nabhi* (navel) and the breast part are distinguished by applique pellets which were pricked with dots. It appears that the popular cult of Ganesa *pratima* made of clay, on the same lines as today, was practised by the people during fifth century A.D. Such smaller or Bala Ganesas of reddish well-wearing *yajnopavita* are found in Maharashtra and Andhra right from the later Satavahana times, i.e., 2nd century A.D. It is known from the pillar inscription at Velpuru (near Sattenapalli, Guntur District) that the Vishnukundin King Madhavavarman-II during his 33rd regnal year corresponding to A.D. 489 consecrated a *pratima* of Dantimukha Svami. Interestingly, this inscription ends with adoration to God Vinayaka— *Vinayakam namasyanti*. This is the earliest known epigraphical citation which refers to a separate shrine for Ganapati as an independent God *(Svayam pradhana murti)*, not merely a niche figure (*Koshthadevata)* or subsidiary deity (*avarana devata*), as generally known to us from many places in India.

VISHNU TEMPLE: PHASE-IC (CIRCA EARLY SEVENTH CENTURY AND LATER)

As a result of careful exposition, finer architectural details and decorated base mouldings of a stone temple dedicated to Vishnu were brought to light at the western part of the village. The earliest phase of the temple belongs to the times of the Salankayanas who were devotees of Chitraratha Svami (Suryanarayana) and according to the copper plate inscriptions of the time of Nandivarman II (420-430), this temple was known as Trailokyanatha Vishnugriha. Docu-

mentation of loose sculptures within the village revealed certain important icons, unique being an almost life-size Ekadasa-mukha Rudra with 11 heads and 24 hands armed with weaponry, Kalabhairava, Chandikesa, Suryanarayana and flying Garuda assignable to *circa* sixth and early seventh centuries A.D.

The Paramesvara temple in the midst of the village, now under worship, was freed from later accretions covering its basement and wall parts. This clearance brought to light ornate pilasters with *naga* brackets, a realistic Nandi or *gomukha pranala* at the northern side wall above the *prati* of the *adhisthana* of this temple which is a unique example in this region. The temple, according to Dr. Sarma, is datable to *circa* tenth-eleventh century A.D.

Paharpur

One of the memorable centres of Buddhism that sprang up in eastern India under the patronage of the Buddhist Palas was Somapura, founded by king Dharmapala (*c.* 770-810), the second Pala king. Its ruins have been identified at Paharpur (Rajshahi District, now in Bangladesh), about 5 km. from the Jamalganj railway station, where the extensive temple and monastery-site were excavated during 1926-34. Amidst the copses and tall bamboo trees and frequent fields of jute, rice and thick green foliage lies the largest known monastery south of the Himalayas. From the eminence surveying the marshalled battalions of cells, the gangled ancillary buildings and the crowd of votive *stupas*, one can fully visualize the ostentatious piety of this strange last phase of Buddhism.

Mrs. Debala Mitra observes in *Buddhist Monuments*, (Calcutta 1971, p. 242): 'While terraced religious edifices are not uncommon in India, the one at Paharpur is more elaborate than any of its extant counterparts. The style of its architecture is perhaps inspired by the earlier terraced *stupa*, with four projected niches containing images of Buddha facing the cardinal directions. Its analogues exist outside India, in Burma and Indonesia, both of which, in intimate connection with eastern India, might have partaken of the same architectural tradition as of Paharpur and might even have been inspired by it. One of the links in the chain is provided by the terraced edifice at Mainamati. A second structure of this style has recently been unearthed at Antichak.

'The grandeur of the sanctuary at Paharpur was enhanced by the exuberant treatment of the exterior walls of its plinth and lower terraces with courses of bricks cut in different shapes and patterns and with continuous friezes of a terracotta plaque of exceptionally rich and varied themes set in recessed panels on the plinth and terrace-walls. As many as two thousand plaques were found *in situ* and about eight hundred were picked up loose. Though of varying artistic merit, they covered "all conceivable subjects of human interest" including divine figures, both Brahmanical and Buddhist. Further, the walls of the plinth contained sixty-three irregularly-disposed niches, each having a stone image. Some of these images were illustrative of the mythology and folklore of the country and belonged to the popular idiom of art and religion. The rest consisted of Brahmanical images of the orthodox order and were affiliated to the late Gupta tradition. They might have been removed from an older and presumably Brahmanical temple and installed here for decoration.'

The main sanctuary, at the central part of the courtyard, is surrounded by an enclosure wall. It rose in three terraces. Its high plinth, 356 ft. 6 in. (108.73 m.) from north to south and 314 ft. 3 in. (95.84 m.) from east to west, was *pancharatha* on plan on all sides except on the north, on which side it was *sapta-*

ratha and was longer, so as to include the staircase which gave access from the ground to the first terrace.

The monastery at Paharpur, the biggest monastery so far exposed, had an uncommon plan in that it consisted of a row of cells built against the inner face of the compound wall of the temple and opening to the expansive open court at the centre of which stood the temple. The whole complex conformed to a premeditated plan practically undisturbed by subsequent restorations.

Nearby was a rectangular brick-temple dedicated to the Buddhist goddess Tara, situated in a compound studded with votive *stupas*. According to a twelfth-century Nalanda inscription, the temple was founded by a monk called Vipulasrimitra.

Antichak (Vikramasila)

The identification of Vikramasila has been controversial. Cunningham identified it with the village Silao near Nalanda, Vidhyabhusan with Sultanganj, De with the Patharghata hill near Colgong, Banerji Shastri with Keur near Hulasganj while Rahul Sankrityayana opined that it might have been situated somewhere towards east from Sultanganj. N.P. Chakravarty identified it with the area around Vateshwar and Patharghata. F. Buchanan had seen the present mound in A.D. 1811 and had stated that it might have been a Raja's house. While editing the report of Buchanan, Oldham was the first scholar who in 1930 identified the village Antichak as the remains of the Vikramasila Monastery.

Dr. B.P. Sinha, after thorough explorations of the area around Patharghata and properly weighing all the relevant facts gleaned from the Tibetan literature, arrived at the conclusion that the mound in the village Antichak is the most probable site of the once renowned Buddhist monastic establishment. Between 1960 and 1969, he excavated the highest mound of the site and was able to expose the central *chaitya* partially. The height of the *chaitya* from the surface level is about 16.25 m. and its width is 100 m. Its plan is like a cruciform. This structure is made of bricks with chambers and antechambers on all its sides along with two circumambulatory paths, both running around it at a height of about 2 m. from each other. Like Somapura, its walls are also decorated with terracotta plaques.

The ancient university of Vikramasila is known to us only through the Tibetan sources. According to the Tibetan historians, this university was established in the late eighth century (A.D. 770-815) by king Dharmapala of the Pala dynasty. It attracted a large number of scholars and visitors from Tibet. The Tibetan tradition is unanimous about the location of the university on the bank of the Ganga. A Tibetan historian, Taranatha, refers to its six gates, which were guarded by the most erudite of its scholars (Dvara Pandits) who subjected the candidates desirous of seeking admission to the first severe test. The standards of scholarships were very high. Like the modern day Senate, there was a board of eminent professors whose main function was to supervise and issue instructions to the various teachers. This board kept a watch over the affairs of the university of Nalanda also because king Dharmapala was their common head. Like the present day university convocations, degrees and titles were awarded to the students by the reigning kings. It is said that there were 160 professors and 1,000 students (monks) during the reign of king Ramapala (1080 A.D.).

R.K. Chaudhary writes (*The University of Vikramshila*, p. 8): 'In the beginning, the University had its birth in the Patharghata region and gradually

it spread into a bigger area having more buildings constructed in course of four centuries. A university having a residential capacity of about 10,000 students must have a wide area. So, in all probability, the area where the present excavations are being conducted, may certainly have been the seat of the Vikramasila university. Dr. B.S. Verma writes: 'It requires further investigation. But a recent inscription discovered from the central shrine refers to king Sahura having installed an image in the monastery built on the hilly land on the bank of the Ganges. Does it not suggest a mistake on the part of the Tibetans or the translators of the Tibetan text who instead of mentioning hilly land, have mentioned 'top of the hill'?'

From 1971-72, the Vikramasila Excavation Project of the Survey under the direction of Dr. B.S. Verma, assisted by B.N. Prasad, S.C. Saran and Dr. Bimal Bandyopadhyay, undertook excavation with a view to tracing out the exact location of the ancient Vikramasila Mahavihara. The most outstanding discovery of 1972-73 was the magnificent Northern Gate. It has a 14.30 m. wide passage with double flights of stone staircase, traces of which were found only in sections up to 4.25 m. away towards south; the passage is paved with stones and bricks of irregular shapes and sizes beyond which was another broad stone staircase of single step or flight. There, the entrance narrowed down with the construction of raised brick platform on either sides. The platforms were provided with rows of pillars numbering four on either sides. The narrow passage of the entrance, measuring 15.15×4.65 m. was paved with brick-on-edge. The roof of the entrance seems to have been supported on stone pillars. At the end of the passage were discovered another set of staircase, flanked with carved stone pieces depicting elephant's head with the tusk carrying a wooden log. On the top was found heavy stone door-sill with sockets for wooden doors. The inner pillared hall (*mandapa*) of the Main Gate was also exposed. On either side of the inner hall were found rows of monastic cells (4.20×4.10 m.), opening towards a longitudinal common verandah of 3 10 m. width. Altogether 20 circular and 25 rectangular cells were discovered including control projections. The Western Gate of the monastery was also excavated. Built of bricks, it is half cruciform on plan.

Under one of the monastic cells of the southern mound was found a twin inter-connected brick-arched underground chamber, entrance into which was through a hole provided in the north-west corner of the floor of the cell. Similar, but badly damaged, arched underground chambers were also located in the northern and western mounds. Remnants of a carved brick pedestal were discovered towards east of the North Gate outside the chambers referred to above. Situated almost outside the northern outer-wall was found a peculiar structure looking like a four-faced elongated oven which may have some ritualistic purpose.

The finds included broken images of Lord Buddha in limestone, a beautiful figure of Jambhala in a pillar relief, a headless figure of Surya, small stone figures representing different deities like Ganesa, Marichi, etc., and terracotta plaques. A circular red terracotta sealing bearing figures of *trisula* above and seated bull below and a legend reading *purshottama* was found from the inner courtyard near the Northern Gate.

Dr. Verma examines how far the structures excavated at Antichak help in the identification of the site with that of the Vikramasila monastery in the absence of any recorded evidence. He writes in his paper, 'Excavation at Antichak' (*The Journal of the Bihar Puravid Parishad,* Vol. I, 1977, pp. 197-198). 'Taranatha refers to its six gates opening towards the four directions besides

two central gates. The present excavation on the mound has led to the discovery of one gate only on the northern side. No other gate has been found here nor is there any chance of getting remains of the other gate in this monastic complex. Since his statement is based on secondary sources (seventeenth century A.D.), he might have confused himself with the other gates there. He further refers to a central shrine of the monastery which was adorned with a life-size image of Mahabodhi. This shrine was exposed earlier by the Patna University team. From the excavation of the central shrine and the northern gate, it has further been revealed that the structures suffered twice and were renovated twice. Attached with the central shrine have been found four sufficiently spacious chambers facing the four directions in which colossal images of the Buddha and the Bodhisattvas were installed. In the excavation, it has been noticed that the doors of all the chambers were blocked with bricks and antechambers have been utilised for shrines at a later date. The northern chamber was filled with debris and after levelling it, a *pucca* floor was made and a brick-pedestal was erected and another stone image of Lord Buddha was installed there. In this connection, it is interesting to note that an inscribed pillar stump was discovered by the Patna University team. The inscription refers to a local chief named Sahura of Chappa (Champa), who dispelled a planned attack by the rulers of Bange over the *Mahavihara*. This attack might have been the cause for Sahura to renovate the shrine and the monastery and install an image of Lord Buddha.'

When Nag-Tsho (Jayasila) came to Vikramasila, Gya-Tsŏn (Viryasinha) was residing there as a student. He was studying in a room at the top of the gate of the *Mahavihara*. Bromton has stated that Nag-Tsho after crossing the Ganga late at night reached the monastery immediately and took shelter in a guest-room. This is the most authentic evidence to establish the situation of the *Mahavihara* on the bank of the Ganga. No other monastery with such massive building structure in Magadha (Bihar) or in Bengal is so close to the Ganga.

It is recorded by Dharmasvamin, a Tibetan scholar who visited India just after the destruction of the Vikramasila *Mahavihara* between 1234 and 1236 A.D., that the *Mahavihara* was razed to the ground and its foundation stones were thrown into the Ganga. This again proves that the monastery was located on the bank of the Ganga. According to the statement of Dharmasvamin, the site was in existence during his uncle's visit to India and his uncle had seen Vikramasila fifty years earlier. It had gone out of existence between 1199 and 1206 A.D.

On the basis of all these evidences, Dr. Verma comes to the conclusion that 'the present site in the village Antichak is none else than that of the Vikramasila Mahavihara.'

Antiquities of different materials like terracotta, stone, iron, copper, gold, silver, bronze, ivory, bone etc. were unearthed. The Buddhist stone images include those of the Buddha, Lokesvara, Maitreya, Manjusri, Marichi, Mahakala, Tara, Sadaksari, Avalokitesvara, Jambhala, etc. The Hindu images are those of Vishnu, Uma-Mahesvara, Sesasayi Visnu, Agni, Yama, Kubera, Ganesa, Parvati, Kamadeva, Saptamatrika, Narasimha, Sadyojata, etc. The Buddhist bronzes include the Buddha, Maitreya, Vajrapani, Avalokitesvara and Manjusri.

From the excavated flimsy wall running like a circular wall, some images were found. These were of Mahakala, Tara, Buddha, Kartikeya, Ganesa, Aparajita, Avalokitesvara, etc. Probably these were concealed in the wall out of fear of iconoclasts who had raided the *Mahavihara*.

The Vikramasila university was a great seat of learning where subjects like grammar, literature, philosophy, medicine, logic, *yoga*, astronomy, *tantra*, etc. were taught. Standard works on these subjects were written at this university. S.C. Saran writes in his paper, 'Vikramasila University — A Centre of Tantricism' : 'The religious base of the university was Tantrika Buddhism. Vikramasila was the chief centre of Vajrayana both for study and practice. Vajrayana modified by local cults and practices gained ground in Tibet as a result of the mission sent from the great Vajrayana monastery of Vikramasila. We have ample evidence to suggest that the excavated monastery at Antichak was the centre of Tantricism — several tantric scholars were associated with Vikramasila. Various manuscripts on all aspects of *tantra* were available in Tibetan translations. Mahapandita Rahul Sankrityayan has published a list of these texts. It appears that the main function of the above referred establishment was the study of *tantra, yoga* and its research.'

One of the seals unearthed here depicts four triangles, one within the other. This definitely represents some tantric *yantra*. The four triangles here may represent all the four Saktis, viz. Yogasakti, Kulasakti, Aisvaryasakti and Vidyasakti, though usually we find six triangles in the Kali *Yantra*. The famous tantric saint or *siddha* and scholar, who held office of the keeper of the Northern Gate, was Naropa who wrote several works including *Guhya Samaja Tantra* and finally settled at Vikramasila.

Lama Taranatha says : 'The Turk king ... destroyed Vikramasila ... The Senas failed to protect the destruction of these monasteries ... (The) worshippers of Ishwara (probably Sena) did not oppose the Turks whilst the latter plotted with several minor feudal rulers to extend their hegemony over the east.'

A thick deposit of ash and charcoal was found over different floors, testifying to the destruction of the site by a fire.

Ratnagiri

Ratnagiri, which according to late Tibetan traditions, was a great centre of Mahayana and Vajrayana learning and art, on the bank of the stream Keluo in Cuttack District of Orissa, is a hillock between the Brahmani and the Birupa, not far from their confluence. The excavations, conducted here from 1958 under the direction of Mrs. Debala Mitra of the Archaeological Survey of India, laid bare the spectacular remains of one of the most important Buddhist establishments of India.

Mrs. Mitra writes in *Buddhist Monuments* (Calcutta, 1971, p. 226): 'Recent excavations on the top of the hillock brought to light imposing remains of one of the most important Buddhist establishments, reclaimed as the Ratnagiri-mahavihara (and not Pushpagiri-vihara, as presumed by some) on the basis of a number of sealings bearing the legend *Sri-Ratnagiri-mahavihariv-aryabhikshu-sanghasya*. With its nucleus dating at least from about the fifth century A.D., the establishment witnessed a phenomenal growth in religion, art and achitecture till the twelfth century A.D. It played a significant role in disseminating Buddhist culture and religion by forming itself, like Nalanda, into an important religious and philosophical academy, to which flocked the entrants and scholars to take lessons from the intellectual stalwarts of Buddhism. By the end of the thirteenth century, the building activity suffered a sharp setback, presumably as a repercussion of the disastrous in-roads of Muslim invaders in large parts of India, though there is no evidence of its having been directly hit by the fury of the new conquerors. The general picture that emerges afterwards was one of decadence in every respect. However, though no longer in an

affluent state, the Buddhists continued to maintain themselves for a few centuries more and strove with their meagre resources to sustain the dying flame of the faith till about the sixteenth century.'

The main *stupa*, sited on the highest eminence of the hillock near its south-western corner, was the principal object of worship. Made of bricks, it had a base measuring 14.5 m. square with six elegantly-moulded projections on each side and a circular drum, the interior of which was designed as a wheel with twelve spokes with the interspaces packed with mud-filling. Dating from *circa* eighth century A.D., it was twice enlarged and enclosed by numerous votive *stupas* of brick and stone, including clusters of miniature monolithic cones.

Facing the main *stupa* were two brick monasteries in a row, with the usual plans, the larger one being 180 ft. (54.9 m.) by 181 ft. 6 in. (55.35 m.) and the smaller one, not taking into account the central projections on the exterior faces of peripheral walls, about 95 ft. (28.975 m.) square externally. One of them had a magnificent entrance porch flanked by pylons and a shrine in the back wall with elaborately-carved stone door-frames, exhibiting a rich wealth of sculptural and decorative ornaments. At least this monastery was multi-storeyed and was in occupation from *circa* eighth to thirteenth centuries A.D. The second one had also a shrine in the back wall. The remains of eight temples, all of bricks, were found in the excavations.

A large number of antiquities were also unearthed. Particularly note-worthy among them are bronze objects including images of Buddha, both standing and seated, Lokesvara, Maitreya, Manjusri, Yamari, Tara and Jambhala, *stupas, chhatras,* a female devotee and decorative pieces inlaid with stones. The other important finds comprise stone images of Buddha and Dhyani-Buddhas and a host of divinities of the Buddhist pantheon like Lokesvara, Padmapani, Vajrapani, Majusri, Vajraraga, Jambhala, Heruka, Sambara, Hariti, various forms of Tara, Vasudhara, Arya-Sarasvati and Aparajita. They belong to different periods and evince divergent styles.

Khalkatapatna

J.S. Nigam, assisted by Amrendranath, K.M. Suresh and A. Jha of the Excavation Branch, Bhubaneswar, carried out recently an excavation at Khalkatapatna, 11km. east of Konark on the Konark-Puri highway. The site is situated on the left bank of the river Kushabhadra. The extensive quarrying by the Public Works Department for constructing the Puri-Konark highway has damaged the site extensively.

The excavation revealed a single-culture habitation. The Chinese Celadon ware along with the egg-white glazed and glazed chocolate ware of Arabian origin were encountered along with the indigenous pottery which is generally of dark grey colour. The occurrence of red ware is scanty and some of it indicates use of red slip. The shapes are bowls, basins, *handis*, vases, miniature pots and beaked lamps. A few specimens bear mat-impressions and some others have stamped geometrical designs confined to the neck or waist.

No structural remains were encountered due to the very limited area of excavation. However, the remains of a brick jelly floor, an oven and a hearth were exposed. Several ring-wells were also noticed. In the habitation area, perhaps on either side of a back lane, a group of four to five ring-wells were noticed; each is supposed to be connected with a house. Their proximity to each other suggests that these were used as soakage pits.

The discovery of two square Chinese copper coins, with the square

perforation in the middle, bearing legend in Chinese characters on both the sides, the Celadon ware, the egg-white glazed ware and glazed chocolate wares from the Arabian countries conclusively suggests that Khalkatapatna was a port-town having maritime trade both from the east as well as the west. The location of the site also lends support to this view as the river Kushabhadra falls into the sea about 3 km. to its north-east. The estuary of the Kushabhadra would have provided very good facilities for the ships to harbour near the site. On the basis of the material evidence, the site can be dated between *circa* twelfth-fourteenth centuries A.D.

This site becomes important because it is for the first time that we have come across an evidence of the trade with the east as well as the west simultaneously. The presence of the egg-white glazed ware and glazed chocolate ware indicates its trade links with the Arabian countries. The Celadon ware and the Chinese copper coins indicate its relationship with the east—China and other neighbouring countries. If excavated on a broad scale, it would give us valuable data on Indian maritime activities.

Hampi (Vijayanagara)

The very mention of Vijayanagara conjures up a vivid picture of a city with a lofty *gopuram* of the Virupaksha temple, the stone chariot of Vithala and the Dussehra festivities which were held in the Mahanavami Dibba. Two great minds, Vidyaranya and Krishnadevaraya, appear foremost before the mind's eye. But for the establishment of the Vijayanagara empire and this great city in A.D. 1336, perhaps the entire history of India would have changed its course. It was this empire which had helped in preserving the best of Indian cultural traditions in history, art, religion and society. The power and magnificence of its rulers were the envy of the Muslim Sultans and the lesser Hindu kings. The city was reputed even in Europe. In 1565, the city was sacked by Muslim armies and abandoned.

Vijayanagara, where the temporal power of the ruler was seen to be a manifestation of a divinely inspired order, offers to the archaeologist and the urban and architectural historian a unique opportunity to investigate, following an inter-disciplinary approach, medieval Hindu urbanism. Spread over an area of more than 25 sq. km., the remains of the city consist of many standing and ruined structures, both sacred and secular. There are also large expanses of uncleared rubble files and numerous overgrown mounds.

Excavation at Hampi was conceived by Prof. S. Nurul Hasan, the then Education Minister of the Government of India, as a National Project — Resurrection of Hampi — to be implemented jointly by the Survey and the State Department of Archaeology and Museums with a view to finding out how town-planing was done in medieval India, particularly in south India. S.R. Rao, V. Mishra, L.K. Srinivasan and Dr. B. Narasimhaiah of the Survey successively and Dr. M.S. Nagaraja Rao of the State Department had been directing the work of excavation, restoration and research.

Vijayanagara is perhaps the most extensive city of the medieval period, of which archaeological evidence has been preserved intact. Contemporary literary works in Kannada, Sanskrit and Telugu, epigraphic sources, and the descriptions of the foreign travellers help in unearthing the archaeological remains of the city.

Vijayanagara was located in picturesque surroundings, amidst striking and beautiful scenery, depicting nature at its wildest and best. The site is naturally endowed with great strategic strength. The wide, torrential and

almost unfordable Tungabhadra on the one hand, and the impassable craggy granite hills, and ranges with bare and denuded boulders and tors on the other provided strong natural defences which the rulers used to their utmost advantage. The city was named Vijayanagara or the city of victory, or Vidyanagara, in memory of the sage Vidyaranya who was mainly responsible for the founding of the city.

The Imperial Capital, at its heyday, had been visited by several foreign travellers, the chief among whom are the Moorish traveller Abdur Razzak, the Russian Nikitin, the Portuguese travellers, Duarte Barbosa, Domingo Paes and Fernao Nuniz and the Italian Nicolidi Conti. They have all left graphic descriptions of the grandeur of the imperial city which they saw.

Abdur Razzak visited the city during the reign of Devaraya II (A.D. 1419-1444). He left Persia entrusted with ambassadorial mission on January 13, 1442 and reached Vijayanagara at the end of April, 1443, visiting several places of interest on the way. He stayed in the city till December, 1443, and was wonderstruck at its grandeur. He has left a graphic description of the city as he saw it, as well as the festivities, particularly the Dussehra. Of the city, he exclaims, "The city of Bidjanagar is such that the pupil of the eye has never seen a place like it, and the ear of intelligence has never been informed that there existed anything to equal it in the world." The Bazars also did not escape his attention. "The bazars are extremely broad. Roses are sold everywhere. These people could not live without roses, and they look upon them as quite necessary as food.... Each class of men belonging to each profession has shops contiguous to one another. The jewellers sell publicly in the bazars pearls, rubies, emeralds and diamonds."

The Dussehra festivities seen by Abdur Razaak deserve to be told in his own words: "In pursuance of orders issued by the king of Bidjanagar, the generals and principal personages from all parts of his empire....presented themselves at the palace. They brought with them a thousand elephants....which were covered with brilliant armour and with castles magnificently adorned.... During three consecutive days in the month of Redjeb the vast space of land magnificently decorated, in which the enormous elephants were congregated together, that presented the appearance of the waves of the sea, or of that compact mass which will be assembled together at the day of the resurrection. Over this magnificent space were erected numerous pavillions, to the height of three, four, or even five storeys, covered from top to bottom with figures in relief... Some of these pavillions were arranged in such a manner that they could turn rapidly round and present a new face at each moment a new chamber or a new hall presented itself to the view."

"In the front of his palace rose a place with nine pavillions magnificently ornamented. In the ninth the king's throne was set up. In the seventh was allotted a place to the humble author of this narrative... Between the palace and the pavillions.... were musicians and story-tellers."

Girls were there in magnificent dresses, dancing "behind a pretty curtain opposite the king". There were numberless performances given by jugglers, who displayed elephants marvellously trained.

During three consecutive days, from sunrise to sunset, the royal festival was prolonged in a style of the greatest magnificence. Fireworks, games, and amusements went on. On the third day, the writer was presented to the king.

"The throne, which was of extraordinary size, was made of gold, and enriched with precious stones of extreme value.... Before the throne was a square cushion, on the edges of which were sewn three rows of pearls."

Domingo Paes, the Portuguese traveller, visited Vijayanagara during A.D. 1520, and has also left an excellent account of the city. Speaking about a bazar, he says, "You have a broad and beautiful street, full of rows of fine houses — and streets of the sorts I have described, and it is to be understood that the houses belong to men rich enough to afford such. In this street live many merchants, and there you will find all sorts of rubies, and diamonds, and emeralds and pearls, and seed-pearls, and clothes, and every other sort of thing there is on earth that you may wish to buy." Of the city, he says, "This is the best provided city in the world."

The documentation project of monuments and fortification walls, in a limited area approved by the Archaeological Survey of India, was initiated and mapping up of the city with the help of air-photography was taken up. The Survey concentrated its programme of scientific clearance in the Mahanavami platform area of the royal enclosure. Such work was also started in the Virupaksha bazar which was said to be 35 m. wide and 720 m. long from the door-step of Virupaksha temple to the Nandi mandapa at the eastern end. It may be noted that the presiding deity of the town Hampe or Pampakshetra is Pampapati Virupaksha, the main deity of the famous temple. The Nagaresvara temple, only the *sikhara* of which was visible from the south, was resurrected. The clearance showed that the original surface of the temple was in level with the original paved surface of the Virupaksha bazar. To the north of the Virupaksha complex, a small but beautiful late Chalukyan temple dedicated to Siva, was exposed from the debris.

The palace enclosure measuring 190 m. × 140 m. is enclosed by a massive wall of cyclopean masonry. Within this enclosure, there are the remains of at least six major structures. The excavation of four of these buildings shows that this was the area of royal residential quarters and the myth that it was a mint stands exploded.

As a part of the clearance operations, the ornate temple dedicated to Krishna which has been dated to the latter half of the fifteenth century on stylistic grounds was attended to. Towards the north-east direction from the Krishna temple, a small and simple pillared hall, which according to the inscription on the lintel of the central bay was a dharmasala constructed by Ahmad Khan, an officer of Devaraya II, was cleared of vegetation all around. Similar treatment was given to the Vishnu temple in Pan Supari Bazar and the Gateway on the main road from Ramachandra Temple.

The monuments conserved include the Virupaksha temple, Virupaksha Bazar, Nagaresvara temple, Nobleman's Palace No. 1 and the dharmasala built by Ahmad Khan. A number of discoveries were also made.

The archaeologists were interested in finding out whether the plan of the city which was considered the biggest market in the East even by the Portuguese and the Chinese travellers followed any ancient text such as *Manasara* (fifth to eighth century A.D.) or an even earlier one, namely, the *Arthasastra* of the third century B.C.

There were, according to Dr. Rao, eleven bazars each dominated by a major temple like the Vijaya Vithala temple, Virupaksha temple, Sri Pattabhirama temple and Sri Krishna temple. Each bazar was said to have specialised in selling a particular class of goods like silk, pearls or diamonds. These were easily identified by the temples near which they were located.

A well-developed water supply system to such a vast city was another subject which had roused the interest of archaeologists. The water supply system had been referred to by the Portuguese travellers but the technique followed was not known.

It was generally believed that the airconditioning of buildings, particularly those built of massive stones was introduced by the Mughals. But the excavations have revealed that right from the fourteenth century or the beginning of the fifteenth century, the Vijayanagara emperors tried to aircondition rooms by ensuring flow of water in narrow channels within the walls and also using cisterns of various sizes. Some of the cisterns found are delicately carved and the normal depth is about 1.5 m. excepting large ones discovered not far from the Mahanavami Dibba which are 2.5 m. in depth.

In the palace complex, the remains of twentyone buildings with moulded stone plinths were discovered. The total area covered in this particular sector was about 7,800 square metres.

The most important building is the Rangashala which has three balustraded entrances on the north-eastern side and the arched entrances are decorated with life-like figures in stucco. Unfortunately, many of them have been mutilated and some have suffered damage due to a conflagration when Vijayanagara was attacked.

Dr. Rao is of the opinion that prior to the establishment of the capital by the Vijayanagara rulers in the mid-fourteenth century, the Vijayanagara palace complex area must have been a fairly important Chalukyan settlement with a few Chalukyan temples. The inscription discovered in one of the buildings belongs to the reign of the Chalukyan king Vikramaditya the Sixth of Kalyani and is dated in the Chalukya Vikrama era corresponding to A.D. 1076 and mentions a gift of eight gold *lokki gadyanas* by a Mahapradhana (Prime Minister) and Dandanayaka (Commander-in-Chief) of the king to two scholars. Lokkundi near Gadag was one of the major mints of Chalukyas and its currency had been recognised as international currency. *Lokki gadyanas* might be from the Lokkundi mint.

Even earlier, the place must have been a Buddhist centre as is evidenced by an inscribed slab. In one of the buildings in the palace complex, there is a brick-built enclosure, 2.5 m. by 1.25 m. in size, having an eight point starlike stem in baked clay. That must have been used for some *yajna* as ash and other contents indicate. There is also a rectangular cistern which might have been used for a ceremonial bath.

The Vijayanagara kings ensured adequate supply of water constructing tanks fed by stonecut channels from the Tungabhadra river. Perhaps Persian wheels were used for lifting water.

The excavations in the Vithala temple complex area and in the Bazar street area yielded 350 copper coins and a gold *panam* of the Vijayanagara period. Some of the interconnecting passages between various structures in the palace complex suggest security measures taken for protecting the king and the nobility when they moved from one building to another.

Excavations have revealed a clock located near Mahanavami Dibba, at the entrance to the palace enclosure. Two round stone pillars about 12 inches in diameter and 1.5 m. tall are positioned three metres apart. At the top of each is an eight inch diameter hole through which passes a bamboo linking both and carrying a gong that was sounded by the guards to announce the hour. Between the pillars on the ground, a 90 cm. diameter circular stone six inch thick, is placed. At its centre, a three inch deep hole is sculpted to position a stake. Around the hole, a series of concentric circles have been etched to form grooves. The shadow cast by the stake on the circles grooved indicated the hour of the day and the gong was sounded by the guard. A similar clock in stone has been found near the Badami caves also.

The royal enclosure on the northern side had three rows of enclosure

walls, nine metres high, near the Mahanavami Dibba area. The first two rows enclosed a wide private path for the royal household leading to the Dibba. The second and third rows had three rooms for the guards to stay while on duty providing security at the point of the climb to the Mahanavami Dibba. Balustrades in stone positioned at the entrance to the climb have been retrieved.

At different spots in the palace complex, three silos about 1.5 m. wide and nine metres deep have been sunk in granite. Many more are likely to be identified in the 16 hectare palace complex. The silos were perhaps used to store grains.

Opposite the Hazara Rama temple where the *Ramayana* is narrated in sculpted figures on the walls is an area identified in the records as Pedda Angadi Veedhi. Recent excavations have exposed a temple where the idol is missing. A few metres away, the Yellamadevi temple with a 1.5 m. idol is intact. However, the temple is buried in three metres deep earth. Persian traveller Nuniz in his travelogue has given accounts of slaughter of hundreds of sheep and poultry at the temple. Even now animal sacrifice is carried on during *yatras*. A well, silted up to the ground level, was excavated and revived recently. It provides copious drinking water now.

The Pedda Angadi Veedhi is linked to a complex behind the elephant stables known as Pan Supari Bazar. Two Jain temples, two Vishnu temples and one Siva temple were excavated. A 90 cm. tall Vishnu idol in blue granite with mutilated limbs was retrieved. In the Jain temple, an idol of Parswanath and two idols of unidentified Tirthankaras were found. The Vishnu temple had the figure of Gajalakshmi sculpted on lintel. Beyond the temple complex is the entrance which was known as the Sringarada Baagilu.

The authorities of the Survey have earmarked an area in the palace complex for raising a garden with plants supposed to have existed during the Vijayanagar Empire times. One hundred rose saplings have since been planted as the Vijayanagar rulers were great lovers of roses. Other plants include jasmine, *paarijatha, sampige, bilpatre, banni* and lillies, numbering over 150.

The temples of Krishna, Vithala and Pattabhirama are being conserved and disintegration checked by treatment. The loose bricks of the *gopurams* of these temples, which are severely weather-beaten and disintegrating are being strengthened and gaps filled.

The archaeologists felt that the areas in adjacent lands were likely to reveal archaeological finds. For decades they were being cropped with plantain and paddy by ryots. About 60 hectares of such potentially rich area was identified near the Queen's Bath, the Vithala and Krishna temples and the nine metre tall Narasimha statue. The acquisition proceedings have also been completed.

Identification of the excavated site is not settled. For instance, the area earlier believed to be a mint turned out to be an army chief's complex. The so-called elephant stables, were an office complex. Is it a statue of Ugra Narasimha or Lakshmi Narasimha? Many of the opinions expressed are hotly contested.

There exists a large literature on Vijayanagara. Two guide books (Longhurst, 1917, and Devakunjari, 1970) are available. John M. Fritz, George Michell and M.S. Nagaraja Rao's *The Royal Centre at Vijayanagara – Preliminary Report* was published in 1984 by the Department of Architecture and Building, University of Melbourne, as Vijayanagara Research Centre Monograph Series No. 4 and it is an excellent publication richly illustrated with fine line-drawings.

Champaner

Champaner is situated on the volcanic hill of Pavagadh in Halol taluka, District Panchmahals, Gujarat, and on account of its religious importance and scenic beauty, is well-connected with Ahmedabad, Vadodara, Godhra and many other towns by buses. On the Western Railway, it lies on the Champaner Road-Pani mines section. The excavations here directed by Prof. R.N. Mehta on behalf of the M.S. University of Baroda, Vadodara, from 1969 to 1974 threw light on this medieval town and also revealed for the first time that the area had been under human occupation as early as the Stone Age.

According to the excavator: 'It is worth noting that the igneous rocks of Pavagadh contain high amount of Rhyolite, giving the rocks the appearance of light yellow with tinges of red. This appearance could be favourably compared with either a Champaka flower or the flame of the fire. This natural colour scheme was thus utilised to give the significant name of Champaner to the town and Pavagadh to the hill-fort. Over the passage of time, these features were forgotten. Now in search of the meaning of Champaner, two theories developed. One ascribed the establishment of the city to Champa, a minister of Vanaraja, the Chavada ruler of Gujarat, while the other credited it to a Bhil headman called Champa. Both these theories seem to be contradicted when looked at from the socio-political history of the region. Therefore, it seems that the geographical explanation is satisfactory.'

Champaner-Pavagadh has its importance as a centre of pilgrimage in Gujarat. Pilgrims have been visiting it continuously for centuries. There are some legends about the migration of goddess Kalika to this place. In Sanskrit and Gujarati literature, 'Gangadasa Pratap Vilasa Nataka' and the Garba of Kalika mention this town. The Persio-Arabic literature, e.g., the 'Ain-e-Akbari', 'Mirat-i-Sikandari' and 'Zafar ul Waleh' also describes the area. The Europeans too knew about this habitation through the writings of Duarte Barbosa, a Portuguese writer:

'It has been asserted by Sikandar-Bin-Manjhu in his *Mirat-i-Sikandari*, that Champaner was in a state of ruins, with its houses in an advanced order of decay and even a large section of the human population had already abandoned the area, during Jehangir's period. It also suggests that though large parts of Champaner wore a deserted look, it continued to be a centre of local power during the 17th, 18th and 19th centuries. The population existed in the royal enclosure and in the Machi area, but the other areas were forgotten and were engulfed with thick forest overgrowth.'

'It was during the 19th century that Pavagadh became a part of the British Raj. The Britishers were attracted towards some of the monuments which seemed to beckon them from their forest hideouts. It was for James Burgess and Henry Cousens, to contribute to the descriptions of the Jami Mosque, Kevada Masjid, Nagina Masjid and other such buildings. It was after this initial work that roads leading to them were constructed.'

Early stone tools found at Champaner were made of igneous rocks of which Pavagadh hill is composed of. One of the rocks is known as rhyolite. The stone tool types were large cores of irregular shape, discoid cores and even a specimen of fluted core. Some working tools including chopper, scrapers, handaxes and cleavers were also found. A skeleton discovered at Champaner, buried in north-south position in a flexed posture, suggests a well-defined burial practice with a definite notion of life after death.

Material evidence, according to Prof. Mehta, shows that Champaner had

no signs of continuous occupation and it might have remained unoccupied for a long period of time since the Late Stone Age.

The existence of early historic Champaner was proved by the discovery of quern with cross bar as known from Nagara, Devnimori and other sites, the copper coins of Sarva Bhattarka, with the palaeographic characteristics associated with his silver coins, and some bricks of large size.

The oldest existing monuments of Champaner are the temple dedicated to Lakulisa, the temple of Kalika, temples belonging to the Jain Digambara sect, tanks, and earthern embankments. Of these, the temple of Lakulisa is the oldest. It is identified by its deity from the lintel of its entrance. Parts of its entrance *mandapa* as well as its *garbhagriha* have collapsed. The surviving structural remains of this fine temple are its base with heavy mouldings, the *jangha* with its fine example of sculptures and its partial roof. The ruins all strewn round the temple site do testify that the temple had fine sculptures of Saiva deities as well as symmetric motifs. The temple bears no inscription, but the style of sculptures and its architecture indicate that it might have been built around the tenth-eleventh centuries. It is also likely that the temple built mainly with local stone might have undergone extensive repairs at a somewhat later date.

The other famous monument is the temple of Kalika Mata, situated on the highest point of Pavagadh. Parts of it have been described in a drama written during the fifteenth century. A *yantra* representing the deity is still worshipped here. It is a well-known Shakta Pitha in Gujarat. The Pitha Nirnaya of the Shaktas notes about it along with the temple of Lakulisa. According to its text, the temple stands on the spot where the right toe of the goddess Kalika fell.

The Chauhan rulers of Pavagadh considered Kalika as their *Istadevi*. The temple had been kept in an excellent state of worship and even dramas were being enacted in its *mandapa*. The temple is still popular with devotees while that of Lakulisa is forgotten.

There are monuments belonging to the Jains along with the Shakta and Saiva ones. These are the temples of Rsabhanatha, Chandraprabhu and Parsvanatha. The temple of Rsabhanatha near the Takorkhana gate is located in an old compound. The Parsvanatha temple of Dudhiya Talav has left only tell-tale signs of its existence while the temple of Chandraprabhu has undergone extensive repairs. All these temples belonged to the Digambaras who were quite powerful in Gujarat. But their co-religionists, the Svetambaras, also laid a claim over them. According to the records of Anhilwad, there are indications that the Digambaras lost their hold during the twelfth century.

Pavagadh had acute water shortage. This problem was solved by constructing earthen embankments at suitable locations to hold rain-water during the monsoons. These dams were able to hold water on the eastern, south-eastern and northern sides of the central cliff where the temple of Kalika exists. Though this northern embankment has collapsed and does not retain any water, the other two do exist even today forming the Dudhiya Talav and the Chhasiya Talav.

These tanks or lakes were formed by constructing earthen embankment in almost circular or semicircular fashion across the natural course of water. Old minepits from where stones were obtained might also have been utilised for this purpose. Wells were sunk on the side of these tanks for providing drinking water. These wells were well maintained by repeated cleaning and removal of earlier fallen objects. This has therefore made it difficult for one to ascertain their antiquity.

There has been a mention in the *Gangadas Pratap Vilas Nataka* that several tanks existed on the Mauliya plateau during the fifteenth century. In this drama, reference is made to Ramaganga Sagar, the present day Chhasiya Talav. The other reference is to a tank built by Gangadas which contained Sudha Dhavala Vari, an obvious reference to Dudhiya Talav.

Mauliya is the largest plateau on the hill having straight cliffs which offer excellent natural protection. However, walls were built to give it an extra protection as well as strength. The present day walls indicate that they were repaired during the fifteenth century, thereby making the earlier fortification on Mauliya obscure.

Machi is another plateau situated in the middle of the hill. Remains belonging to the pre-Sultan period exist here. The townscape of this area has been considerably altered on account of shops and other infrastructures created by the Department of Tourism, Gujarat. The area was well connected with Mauliya by a series of gates, out of which the Taragadh has an old form. This gate controlled the movement along the difficult passage from Halol on Mala. Below this was a wooden bridge known as Patia Pul, which could be lifted or removed to cut off Mauliya from Machi. The entire passage was difficult to cross. En route watch-towers and structures had been built for stationing small limited defence forces. It also had a network of secret passages and a bridge was built over a narrow ravine at a later stage.

The main area of Machi has undergone extensive changes. It had two tanks called the Annapurna and the Talia or Telia. These lie one above the other. The Annapurna on the upper level does not retain water any longer, whereas the Talia is still in use. The Machi plateau resembles a platform from where it is possible to reach Makaji Kothar, Patai's Palace, Mala as well as the Mauliya.

Just below Machi lies the main fortification of the Chauhans. The western end of this fortification gets terminated near the Khapra Kodhia watch-tower where the bastion and the fortline are still seen. The fortline then runs eastwards and its main gate lies sandwiched at the place called Budhiya Darwaza. This is in a good state of preservation along with its guard room. The fortline moves east and then turns southward from this section. Here a gateway is seen buried up to the lintel level. The fortline then passes below the Talia Talav and runs up the hill forming a protective ring below Machi. This fortline delineated the lower bounds of Champaner upto the 15th century. The fortline had been successively extended by later constructions during and after this period.

There has been no further discovery relating to the earlier period lower down this fortline. But from the available descriptions and a few finds like large stone balls and other artefacts, there are indications that the Chauhans had this as an outer defence line. From the remains of this area, one could say that Champaner existed on the hill up to the 15th century. After the conquest by Muzaffaris of Gujarat in A.D. 1484, Champaner was extended and further developed.

The fifteenth century saw an interesting upheaval in the political development with the rise of the Muzaffari dynasty in Gujarat and the Khaljis in Malwa. Between these two regions, there were the buffer states of Idar, Champaner and others. These states sided with one or the other depending on the situation. These states too had their own socio-political parameters which led to an inter-state struggle.

Champaner used to be a powerful buffer state between Ahmedabad and

Mandu, but its defeat and the removal of its ruler Patai Raval resulted in the decision to build a large city with a strong garrison at Champaner by Mehmud Begda. However, the later writers camouflaged this decision by stating that the ruler liked its environment and decided to make it his new capital.

In order to create a new capital, intensive activities started and these lasted for about half a century from A.D. 1484. A variety of structures, roads and bridges were constructed. Military, civil as well as religious places were built. It thus started to flourish as a large prosperous city with well laid out gardens and aquatic constructions. But after A.D. 1535 it once again saw its destruction. This has been lamented over by Sikandar-Bin-Manjhu in the beginning of the seventeenth century.

The city planning was undertaken from the area below Machi and some parts on the hill were strengthened. These changes have been well preserved by parts of the Machi fortline. The fortification between Atak and Machi were developed, while the lower area of the hill was covered up for a large planned city. The city thus had a downhill growth progression pattern. The garba of Kalika has indicated it by assuming that the goddess descended from the Pavagadh hill and established Champaner.

The city was planned in such a manner as to give it a dual role as a state capital as well as a defence frontier on the eastern side of Gujarat. But it is the defensive system of this city that has given it due prominence. This is clearly seen from the Hathikhad area lying east of a large tank locally known as the Vada Talav. In Persian records, it is mentioned as Talab-i-Imad-ul-Mulk.

The ruins at Hathikhad indicate that the place had the residence possibly for the commander of the forces in the north-west direction with walls for defence. The large tank in the vicinity solved their water problem and provided safety. Utilisation of the tank for development of a pleasure-resort was therefore possible.

The main fortification at the base of the hill gave protection to the inhabitants and the royal household, and was a route of retreat. A wall of about six km. built on the plains protected the inhabitants and the city. Of this wall only parts standing to some height exist in the north, east and south while the rest is in ruins. The wall is of brick and lime as well as local rubble. It connected the northern side of Saria-Vkaria hill to the main hill of Pavagadh, and terminated near a burj of Atak fortification. The wall has an irregular semi-circular plan with projection on the south-eastern side.

The builders took full advantage of Pavagadh and the man-made features with Saria-Vkaria on the remaining side to develop into a circular township within a radius of about two kms. enclosing its royal household and the local population.

The excavator records: 'Though the town planning has different designs, its main design is circular. At the nodal point is the royal enclosure or Hissar-i-Khas and the Jami Mosque. Three roads radiated outward, one towards north at a little distance from the Delhi gate. To the east and the south-east, the roads move from the Jami Masjid area. These formed the main roads of the city. These roads were broad and usually straight, though due to geographical factors layouts were duly altered while laying out. Wherever possible, bylanes intersected the main roads at right angles; these bylanes were also fairly wide. The roads were well paved at the entrance gate with stones while the other parts were unpaved. Excavations do indicate that regular efforts were made to fill up irregular surface with gravels of local stones; large rubbles and slabs were used for constructing uphill gradient that was convenient for men and animals, though unsuitable for modern vehicular traffic.

Strong bridges on pointed arches were built over streams and *ghats* were also constructed on Jorvan as indicated by the remains. At places, uphill bridges spanned the ravines to allow movement.

Champaner faced acute shortage of water. During summer and winter months, natural water would become scarce. This scarcity was overcome by employing various means to store monsoon and underground water by developing water reservoirs of different kinds. Large sized reservoirs were constructed by means of earthern embankments across the natural flow of streams at different levels. These earthen embankments were quite formidable. Some are in use even today, though many have been destroyed due to neglect or intentionally. There are indications that there were a series of lakes on the hill, specially within Machi and Atak area. The largest lake on the plains is the Vada-Talav or Talab-i-Imad-ul-Mulk. The Medi on Atak area, the Talia on Machi and the Dudhiya on Mauliya are fairly large and survive to this day. Other systems for the collection of rain water from roof tops etc. into reservoirs of small dimensions were also employed. Such systems do exist at Patai's palace and Makai Kothar. One such large reservoir is the Hauz-i-Vazu in the Jami Mosque complex. Usually, these were covered though some like the Hauz-i-Vazu were open.

Transportation of water drawn from the reservoirs to different parts was carried out by means of an elaborate channel system. This system was developed in such a manner that bv means of gradients, water from the source was easily transported to the other end. The system had both utilitarian as well as aesthetic aspect. There were gardens with flowing water; houses too had running water supply, Hauz or Pavilions were even constructed over them. Besides these, pleasure resorts were built on the embankments facing the water front. The assurance of water supply helped in the development of the town.

The military structures consisted mainly of massive fort-wall lines reaching to heights of about ten metres and had regular passage for troop movement. The fortline had well laid out merlons which provided vantage points from where weapons could be discharged easily. This shows that these defences were well laid out as compared to the earlier ones. This defence wall encircled the entire city and in case of retreat, a well planned fortline for rear-guard position existed. The city along with the royal enclosure had its retreat passage uphill through the Bavaman fort, which was overlooked by the Atak fortification. Its upper fort was Machi and then came the topmost fortification of Mauliya overlooking the entire terrain.

There were series of Catapult stands having trapezoid construction of parallel walls behind the main fortification on the Atak fort. Several stone balls of various dimensions obtained at this site indicate that these stones and other forms of missiles were hurled at the enemies.

The city was surrounded by its suburbs. Here, there were several compound walls serving two purposes, to delineate property and to provid security. Within these existed most of the civil and religious buildings, though most of them are in ruins and covered by their own debris as well as with vegetational growth. Explorations and excavations do give us a fair idea about their nature and function.

The residential areas represented those belonging to the rich, the middle class and the servants. Shops also existed within this area. The large compounds with their numerous constructions indicated that these belonged to the rich. Entry to these compounds was through a broad passage of about three to four metres. Within the compound, stables were located as indicated by a series of short stone pillars of horse stables.

The main building was located on the other side of the compound and had yet another protective wall with a compound. It too had a fairly large entrance. The passage here was zig-zag and prior to the entry into the main building, one finds an open verandah with three rooms at its back. The main building was then entered through a central passage flanked by a room on either side. This then opened out into a lime-plastered courtyard and the other into a garden, a Hauz and a kitchen. Beyond this, on the other side of the yard was the main building having six rooms in units of three. These are two storeyed. Here one finds another passage connecting it with the backyard where a similar six room structure though smaller in dimension and one storey high was located. Along the side of the passage, three rooms were constructed, each having provision for channels with flowing water.

A garden with open pavilion along with channels of flowing water existed in front of the backyard. The servants' quarters were also located in the compound complex. These were built round an open square in the centre, and were connected with the main structure.

Several such buildings were located within the fort as well as its suburbs. They however varied in details and layouts. Many gardens existed within and around Champaner, though most of them have been destroyed. Some of the existing structures do indicate that some sort of cooling system employing air ducts and flowing water existed. Along with this, a variety of tanks was also constructed within the gardens.

Other house-patterns had a square or rectangular compound with common protective walls. Yet each house in it was independent in nature. It thus indicated the functional unity of the community occupying the area.

The city plan permitted shops to be erected at important places with their front elevation facing towards the roads. These were located at crossroads and along certain streets. Most of the shops consisted of a single room, though the larger ones had two rooms and some even had underground cellars for storage. Shops were also permitted outside the fortification. These were the bazars outside the city. Certain other constructions indicate the possibility of tool stations.

The mosques were large and magnificent. The pillared prayer-hall was on the west and was surmounted by a series of large and small domes. It also had three, five or even seven *mihrabs*; these were beautifully ornamented with flower, chain, pot and foliage motifs. Some larger mosques had raised central dome reaching upto two storeys, permitting enough light into the main prayer hall. The main prayer hall of these larger mosques had a section screened off by means of perforated stone *jalis*. This section was reserved for the ruler and was known as 'Muluk Khana'. Balconies were even constructed to provide rest and light. The main prayer hall opened out into a large courtyard that had covered gallery running round it, with entrances from different sides leading into the courtyard and to the mosque.

These mosques were built on high plinths and as such were a prominent feature of the townscape. They were ornamented with fine geometrical and arabesque patterns. The obligatory minarets flanked either side of the prayer hall or the central arch.

Simpler single walled constructions for prayer were built near mausoleums and in graveyards, The mausoleums were another characteristic feature of Champaner; these were usually single room structures with openings on all the cardinal points. In the centre lay a grave with a tombstone, though in many cases this element is absent. The graveyards were usually located outside the town, but in some cases graves have been located in the vicinity of the mosque.

Most of the construction in Champaner relied on local rubbles, augmented by sandstone procured from the Nathkuva mines. Some amount of mining for local stones was also carried out. Well-fired clay-bricks were also utilised as building material and were set in either hydraulic lime or in mud. Lime was used as plastering material. Polychrome glazed tiles were also in use. The flooring was prepared by using stone and terracotta tiles or by plastering with clay and dung mixture. Lime concrete and terracotta half round tiles were used as roofing material. Besides these, other material like iron nails, chains etc. were employed in the construction work. Local timber might have been used for the wood-work of these buildings, but it has been destroyed.

The collapse of Champaner in the sixteenth century, specially after A.D. 1535, was sudden. It was the result of a decision to shift the capital, and later on the geo-political importance of the region ended with the decline of the Sultanate of Malwa and Gujarat. It has, however, retained its importance as a religious centre and a place of scenic beauty throughout the period, while the grandeur of its monuments still inspires the visitor.

Fatehpur Sikri

Jalalu'd-Din Muhammad Akbar (born 1542; ruled 1556-1605), the third Mughal emperor of India, laid the foundation of the extraordinary capital city of Fatehpur Sikri in 1569. Located thirty four kilometres to the west of Agra, its monumental remains dominate the top of a rocky ridge, roughly five kilometres long and more than one kilometre wide, that rises majestically from the dry bed of the huge lake popularly known as Moti Jhil. The city was elaborately planned and the ancient localities of Sikri and Nagar were harmoniously incorporated in it. The fortification walls, gates, royal offices, palaces, harems, houses of the nobility and markets were completed within five years under the direction of the emperor, as mentioned by Abul Fazl and Father Monserrate.

The palace complex was built to the east, where the ground sloped away from the highest point of the ridge, which the patron saint Shaikh Salim Chishti had already occupied for the mosque and the *khanqah* (monastery). Below the palace site, the city was meticulously laid-out. The building works at Sikri proceeded quickly, partly because the red sandstone of Rup Bas was supplemented by the darker red stone cut from the ridge itself which "might be cleft like logges and swane like planks to *seele* chambers and cover houses of a great length and breadth" (Finch, 1610). The emperor's own deep interest was all-consuming. "He even quarried stone himself, alongside the workmen", and "sometimes put his hands to the other menial tasks" (Monserrate). Akbar's decision to have fully decorated constructional members pre-fabricated off the site (Monserrate), would have allowed the construction to go ahead with the least inconvenience to the royal court, which remained in residence. In June, 1573, Akbar returned to Sikri victorious from Gujarat and celebrated his glorious triumph and renamed Sikri as Fatehabad, which soon became popular as Fatehpur (the city of victory).

Massive stone walls almost seven miles in length surround the city except on the north-west where the vast lake provided security. Most of the imperial structures, however, were clustered together on top of the sandstone ridge. That is where the huge Jami Masjid and an equally grand palace are located.

The Jami Masjid was placed in the centre of the city having Chishti complexes in the west, royal complexes and the houses of the premier noblemen in the east with a grand market place (*Chahar Suq*) that extended on

both sides of the road upto Agra Darwaza. The northern side accommodated the ancient settlements of Sikri and Nagar while the southern side had the general population with the houses of the officials, merchants and professionals of different communities with temples, tanks, wells, gardens, mosques and public *hammams.*

It was less than fifteen years after the city was founded that in 1585, Akbar set off from Fatehpur Sikri for Lahore. And then Akbar seldom visited Fatehpur Sikri.

It is, however, not correct to say that Akbar left the city for scarcity of water because emperor Jahangir records in his memoirs that while visiting Fatehpur Sikri in 1619, he ordered the measurement of the great lake full of water Besides, Akbar's mother Hamida Banu Begum and other senior royal ladies remained mostly at Fatehpur Sikri. Shahjahan and Aurangzeb celebrated Idu'l-Azha and other festivals at Fatehpur Sikri. Muhammad Shah's coronation also took place at Fatehpur Sikri and on that occasion the Pachisi court was made on the grand platform of official complex.

At the instance of Prof. S. Nurul Hasan, the then Minister of Education and Culture, three national projects of excavations were initiated by the Survey in 1972 when the four hundredth anniversary of Fatehpur Sikri was celebrated. These projects included the excavations of historic medieval cities, namely, Hampi (site of Vijayanagar) in Karnataka, Champaner in Gujarat and Fatehpur Sikri in Uttar Pradesh. These sites of medieval capitals of historical and cultural importance were destined to reveal material remains of these magnificent cities which were not adequately described in the contemporary histories.

The Fatehpur Sikri Project could not be taken up immediately. However, in 1976-77, two heaps of debris at the slope of Badshahi Darwaza (FPS I) of the Jami Masjid and near Tansen's Baradari (FPS II) on the ridge were cleared at the instance of Dr. S.C. Ray, the then Superintending Archaeologist, for restricting the Tourist Department from building a Tourist Complex in the archaeological area.

The excavation at FPS I revealed structural remains limited to plinths, floorings and bases of pillars and pilasters of a small house with a rectangular room, flanked by square side-chambers on either side, being inter-connected through a doorway. A small cell lying at the south-eastern end of the side-chambers suggests that the entire structure may originally have been decorated with carvings in low relief.

In front of the Badshahi gate, on the slope behind Daftar Khana, a complete *hammam* complex, consisting of five rooms, was also exposed. These chambers of the structure were well preserved with their floors, plastered walls and low domical *vaults.* Traces of fresco paintings and beautiful plaster-cut work were found on the walls and the soffit of the ceiling of the rooms. This house, therefore, might have belonged to a man of high rank. One of these rooms, where the inlet drain's clay conduit passing through the walls and ceilings were traced, appeared to be a hypocaust chamber.

After the posting of W.H. Siddiqi to the Northern Circle, Agra, in 1977, the national project of Fatehpur Sikri excavations received due attention. He initiated the Project with the systematic exploration of the ruined city; its historical buildings were listed and spotted on a map. Moreover, he got the contour survey of the major parts of the ridge and the adjoining area in the plain completed. The Aligarh Muslim University also joined the excavation project. Scientific documentation of archaeological and architectural remains was also completed. The city was divided into different sectors on the basis of

its topography, townscape, toponomy and sociology of the town based on habitation and their professional craftsmanship.

The area excavated on a trial basis was incorporated for a scientific excavation and the house remains were fully exposed and the nature of these structures was determined. The Mughal and the Chinese ceramics were collected and studied.

The major portion of the excavation took place on the eastern ridge near the Tansen Baradari which was the area allotted to the princes and noblemen of higher ranks, as recorded in contemporary Persian histories. Four seasons of excavation of this area under the direction of Siddiqi exposed the ground-plans and architectural remains of three *havelis* built of rubble and Mughal burnt-bricks with lime mortar; the walls have thick lime-plaster on both sides. The series of rooms around the spacious court were erected on platform with verandahs supported on pillars and arches. The large rectangular rooms had flat roofs which were richly decorated with stucco and fine lime-plaster with coats of mica flakes with geometrical designs. These houses had elaborate courtyard porticos (*deorhies*), raised cistern with water-channel fountain and arrangements for waterfalls.

The kitchens had attached store-rooms and elaborate water drainage both covered and open. Some of these drains had an opening with a stone grill of elegant design. One of the kitchens had the square stone platform (*chowka*) for washing the utensils near which a grinding-stone with pestle was found. Some of the houses had two bathrooms and two lavatories with stone steps and niches and solid masonry or stone topped pedestal for putting the waterpot in the toilets. In one case, the lavatory was attached with two rooms from either side which is a remarkable find as it was so far believed that attached bathrooms and lavatory system was introduced in India by the British. Actually, the credit for this should be given to the Mughals.

The roofs were covered with coloured glazed tiles as is evident from the huge quantity of such tiles found from the debris.

The lavatories had back-door for manual service. The bathrooms of Turkish variety were both of cold and warm water. The dados of the inner chambers of one bathroom was beautifully decorated with square green and blue tiles fixed with very fine lime-paste. A few complete tiles were extant until they were damaged by human vandalism. The terracotta pipes fixed in the walls and attached to cisterns were also found intact. Heating chambers with decoration for holding the metallic pots meant for heating the water were also exposed. In another house, the entire courtyard was found to be paved with red sandstone slabs. In one house, the rooms with raised platform on one side were also exposed which may have been the master's rooms or *Shahnashin*. Such arrangements were observed in the ladies apartments also. These rooms had beautiful deep niches for keeping books and other belongings.

A lavatory-cum-bathroom having decorated water basins and toilets with urinals with a thin partition wall was excavated. This arrangement clearly indicates that they belonged to the Muslim noblemen who used to have *Istinja-khana* separate from the lavatory.

The houses had attached guest rooms or Yatish-Khanas with bathrooms and lavatory. A small tank sunk into the floor near the entrance of toilet was probably meant for storing waste-water which was removed by manual labour. The western wing of the complex consisted of five rooms facing east with a verandah measuring 16.3×3.5 m. In one of the rooms, a raised platform was provided. The walls of the rooms were provided with a number of niches

probably for keeping things of daily use including books. In one of the rooms, three big storage jars buried up to the neck were found. These were probably used for storing wine or grains. A small square marble-slab with an iron-ring on the top was also encountered. In front of the above rooms, huge brick-pillars built at regular intervals were noticed accommodating arched entrances of the verandah with a flat roof. The southern wing consisted of two simple rooms and the eastern wing of five rooms facing west, the latter being built at a higher level. The rooms facing west were provided with a small platform built of masonry over the already existing stone-paved floor. The room facing south was provided with a raised platform, measuring 7.6×3.9 m. The central courtyard had a raised platform, which was probably used for prayer by the elders of the family. The width of the platform was 6.6 m., the length remaining unascertained due to disturbance. At the south-western corner of the complex, a huge toilet measuring 7.5×7.1 m. with forty-two seats and with entrance at the south-eastern corner was exposed. The seats were made of big slabs of sandstone resting on small lime-platforms. A narrow drain (10-15 cm wide) plastered with lime was provided in front of the seats. This drain was found connected to an underground drain covered with slabs of sandstone. The entire room was paved with rectangular slabs of sandstone. The very fact of providing so many seats in a single toilet indicates the number of persons in the family and the sense of hygiene. Another toilet in the south-eastern corner and to the west of the existing *hammam* was provided with seven seats with a drain sloping towards south-west and a small raised platform with a stone slab at its top. The entrance of this toilet was connected to the nearby *hammam*. Originally, the walls of the *hammam* were profusely decorated with coloured square tiles to a height of 1 m. from the floor level. This evidence further corroborates that the whole complex had been occupied by a wealthy group of people, evidently the nobles.

The above-mentioned structures were built of sandstone rubble plastered with lime over the layer of mud. The thickness of the plaster varies from 3 to 11 cm. At some places, it was noticed that the bricks were kept vertically in between the layers of lime-plaster to strengthen the plaster as well as to increase the thickness. The occurrence of pieces of mother-of-pearl cut into geometrical designs and mica which were used for decoration was also noticed.

Pottery recovered during the excavation included red ware, glazed ware, Chinese porcelain and the typical Mughal *de luxe* ware showing decorations. Some of the sherds of the Chinese porcelain bear Chinese script on the base and showed designs representing mystic animals, landscapes, fish, etc. Sherds of the decorated ware bear fragmentary inscription in Arabic characters. A large number of glass objects including portions of high-necked jars or *surahis* and bangles of various colours were also encountered. Other antiquities recovered include: terracotta animal figurines, copper coins and other objects, and iron objects such as nails, battle-axe, hammer, arrowheads, fish-hooks, etc.

A series of shops running from Agra Gate to Naubat Khana and up to quadrangle before the Diwan-i-Am were unearthed on both sides. The square arrangement of the shops within the Naubat Khana was designated as *Chahar Suq* in the contemporary Persian literature. Father Monserrate also recorded this rich shopping centre for costly commodities including gems, pearls and jewellery with graphic description. These shops were built on raised masonry platform lined with carved stone slabs having single or double cells in every shop.

This shopping complex flanking on either side of the road looked

uniform and homogeneous. At least 175 shops were located on either side of the road between *Chahar Suq* and Agra Gate. Shops may be grouped into two types: (i) those having a platform (width 1.6 m. and height 40 cm.) along the road; and (ii) those without platform. Those having platform were followed by gallery (width 1.8 m. and height 80 cm.) which was a pillared verandah, where the shopkeepers sat before their displayed items. The main stores (cells) were made of dressed stone-blocks of varying sizes. At places, remains of floorings were noticed. Other noteworthy remains include artistically-chiselled bases of stone pillars, pilasters, brackets, lintels, etc. The evidence of broken beam may indicate the prevalence of flat-roofing.

Excavation on a mound in Sector FPS-VI below the ridge near railway-lines in an area of 25 × 22 m. revealed the ground plan of a building, comprising a verandah (6.75 m. EW × 4.50 m. NS), couple of rooms (4.5 m. NS × 3.5 m. EW), spacious hall (6.75 m. EW × 4.35 m. NS) and side rooms (4.35 m.). The structure is built of massive rubble with lime mortar. It was on raised platform, approximately 1.15 m. high. The main entrance to the structure is on its north. The rooms were provided with doors. In all, there are twenty doors of 1.20 m. width. The excavation indicates the practice of double door system, followed by the Mughals. The thickness of the walls of this structure varies from 1.20 m. to 1.60 m. The building is also provided with 1 m. wide balcony on all the four sides, possibly provided with flat as well as domed roofs. Behind the structure was an open terrace (4.10 m. wide × 10.10 m. length) running all along the western half, now fully exposed. About 13 m. east of the plinth, there stands a stone fountain carved with chevron, 2.10 m. in diameter, having petalled outline, its depth being 1.08 m.

The boundary walls which enclosed the main structure and garden around the fountain was also exposed along with the remains of a guard house. Strikingly, no remains of kitchen, bath, fire-place or lavatory block were encountered during the excavation. On plan, it resembles the famous Daftar Khana building at Fatehpur Sikri. A drain connected with a soakage tank and remains of brick-built well with a huge dilapidated platform connected with the water-works and a raised tank were also unearthed.

The excavation at the so-called Mint (*Karkhanas*) area revealed a spacious courtyard, two-bay deep colonnades with stepped and sloped entrances, and arched passage within the central cloisters. The floorings had original lime concrete plaster yielding sets of ornamental iron horse-shoes and nails of Mughal variety. The area was evidently used as the royal stable.

Ceramics include the Chinese blue and white, Celadon, glazed and red pottery. The prominent shapes are vases, deep large dishes (*gabs*), bowls (*pyale*) and jars (*surahis*). A few tiles in red, yellow, green and blue colours were also found. The minor antiquities include bangles, beads, iron tool, horse-shoes, nails, and copper and silver coins.

Excavation was carried out, according to Siddiqi, between Dewan-i-Am and Agra Gate in order to (i) trace the original road of Akbar's period including the nature and plan of structures on either side of the road and (ii) expose the structural remains in the courtyard of the so-called mint-house to correlate them chronologically. Four cross-roads with secondary roads and structural remains flanking the road, came to light. It is observed that harder stones were used for the construction of roads and sandstone for structural construction. It was further noticed that well-maintained cross-roads directed towards city-gates and passing through residential areas and markets joined the main road to four places. There were two types of roads: (i) main road (width about 15.4 m.) and (ii) secondary roads (width 3.65 m.). A grid pattern

of road network was planned. The thickness or packing of the road varied between 34 and 50 cm. The stone boulders were dressed in *wedge* or tooth-shape and set in mortar in such a way that the thinner and sharper ends remained always below. This provided better strength and stability to the road. Soil analysis indicated that base course consisted of soil mixed with stone aggregate having about 60% of silica, 13% calcium oxide and 11% iron and aluminium oxide together.

The place which was known as the *Ibadat khana* (hall of worship) on the basis of literary references and a painting of Akbar Nama yielded encouraging results. Formerly, it was the cell of Shaikh Abdulla Niazi Sirhidi, who was a disciple of Sheikh Salim Chishti. On his joining the Mahdavi sect, this building was converted into the *Ibadat khana.* The excavation revealed a boundary wall made of rubble and lime mortar, measuring 48 sq.m. A quanati masjid (Qibla Masjid) with five arches was on the western side, of which the three were extant. 'Allah' was written in Arabic in stucco plaster, on both sides of the spandrels of the arches. Above this, there were decorated mouldings and beautiful interlocking tulips picked out in white. The northern side was with a number of rooms. On the eastern side, there were steps each measuring 2.40×1.70 m. through which the participants had their access to the buildings. These steps were made of rubble and lime mortar.

The main building in which Akbar used to sit along with the leaders of various religions was made of rubble and plastered with lime. It was a pyramidal structure of three terraces in diminishing sizes. The lower one measures 21 sq. m. and with two steps giving access to the second terrace. This might have been supported by a pillared verandah. The second terrace measuring 13.35 sq. m. had also a pillared verandah. Here the king used to sit and preside over the debate. The third terrace was with two rooms, the eastern one was well-plastered and measuring 4.65×2.90 m. whereas the western room had a door and was used perhaps as an ante-chamber.

The work in the central court of the so-called *Taksal* (Mint) was taken up by the Survey's team with a view to establishing its correlation with the structural remains within the quadrangle, which were commonly supposed to be foundations of parts of coining and assaying apartments along with an aqueduct carrying water to workshop. The excavation, however, exposed a stable-yard. What was being regarded as foundation of minting complex, according to Siddiqi, turned out to be six dwarf walls, four of them traversing the quadrangle diagonally and two laid straight across, parallel to the south-eastern sides of the supposed *Taksal*. These dwarf walls have stone rings fixed on their sides at regular intervals for securing the animals with chains or ropes.

In the south-eastern portion of the quadrangle, a masonry tank (7 m. long × 4.30 m. wide × 1.30 m. deep) on a raised platform was exposed along with a portion of the original floor of lime concrete and two flights of steps on either side of the tank. The floor was not found to be fully even, as at places the original rock-surface was left untouched. The recovery of a large number of broken tiles in and around the tank suggested that it had a roof.

The finds from this area included red, blue and glazed pottery, Chinese porcelain, glazed tiles and iron objects. The shapes comprised bowls and jars.

The excavations on the sides of the so-called Mint and the Treasury unveiled house-plans and original passages.

Among the antiquities were a copper coin, perfume bottles (*Zir-i-Itardans*), iron objects, marble-cork and stone objects including a grinder (*Chakki*). The pottery included Chinese glazed, red, buff and black wares.

Present Undertakings and Future Prospects

Since independence, there has been a tremendous increase in the activities of the Archaeological Survey of India. Some of the present undertakings of the Survey are briefly discussed below:

Preservation of Monuments and Sites

Watch and Ward Arrangements at and Structural Conservation of Monuments and Sites

The Survey has under its charge nearly 3,500 monuments. Their upkeep involves amongst other things watch and ward arrangements and annual and special repairs according to the needs of each individual monument. For this purpose, the Archaeological Survey of India has sixteen Circles covering the entire country, each Circle headed by a Superintending Archaeologist who is assisted by two Deputy Superintending Archaeologists and a Deputy or Assistant Archaeological Engineer in addition to other technical and ministerial staff.

Chemical Preservation of Monuments

The sites and monuments are affected by the elements and, therefore, require chemical treatment. To deal with the situation, the Archaeological Survey of India has a Chemistry Branch (with headquarters at Dehra Dun) which has two Regional offices (with headquarters at Dehra Dun and Hyderabad) and four Zonal offices (at Dehra Dun, Bhubaneswar, Madras and Aurangabad, Maharashtra) so as to cover the entire country. This Branch is headed by Director (Science).

Gardens at Monuments and Sites

Some of the monuments had, in their original lay-out, gardens around them. In other cases, it has been found desirable to provide them with lawns, gardens, etc., so as to improve the setting. The Archaeological Survey of India, therefore, has a Gardens Branch (with headquarters at Agra) with three Zonal offices (with headquarters at Agra, Delhi and Mysore) to cover the entire country. The Branch is headed by the Chief Horticulturist.

Research, Training and Publications

Excavation and Exploration

The Survey has five Excavation Branches located at Nagpur, New Delhi, Patna, Vadodara and Bhubaneswar. The Circles also carry out excavations as and when found necessary.

Prehistory

Prehistoric studies necessitated the creation of a separate Branch (with headquarters at Nagpur) with officers who carry out studies in Stone Age Archaeology which also involves exploration and excavation. The Branch deals with highly specialized studies in which Tertiary and Quaternary geology plays a large part.

Epigraphy

The country has immense inscriptional material. Thus, to cope with it, there is a separate Epigraphy Branch headed by Dr. K.V. Ramesh, Director (Epigraphy), under whom are two sub-divisions, each headed by a Superintending Epigraphist and devoted, respectively, to Sanskritic and Dravidian inscriptions (with headquarters at Mysore).

There is still another Epigraphy Branch dealing with Arabic and Persian inscriptions and headed by a Superintending Epigraphist (with headquarters at Nagpur). The Superintending Epigraphist in charge of this Branch also deals with numismatic material in Arabic and Persian. The Branch has the Chief Epigraphist, Dr. Madhav N. Katti.

Temple-survey Projects (Northern and Southern Regions) and the Building Survey Project

To study north and south Indian temples, which present a variety of problems, particularly in respect of their origin and development, a project to document and publish detailed studies of these temples had been launched. The Project is handled by two Branches known as Temple-survey Project (Northern Region, with headquarters at Bhopal) and Temple-survey Project (Southern Region, with headquarters at Madras). The Building Survey Project has its headquarters in New Delhi.

Geochronological and Chemical Studies

Excavations and explorations, particularly of Stone Age and Proto-historic sites, require a lot of environmental studies. For this, there is a special division in the Chemistry Branch (with headquarters at Dehra Dun). This Branch also carries out investigations on the composition of antiquities, their method of manufacture, etc., besides chemically preserving them.

Institute of Archaeology

With a view to training post-graduate students in various branches of archaeology, the Survey runs an Institute of Archaeology headed by a Director, (with headquarters at New Delhi). The syllabus covers almost all the branches of archaeology and includes practical training in exploration excavation, conservation of monuments, etc. The duration of the course is two years and a post-graduate Diploma in Archaeology is awarded to successful candidates after the completion of training.

Publications

The Survey publishes research journals, excavation reports, memoirs and other scholarly monographs besides guides to monuments and sites and picture postcards. There is a Publication Unit in the Headquarters Office at New Delhi headed by the Director (Publications), Shri K.N. Dikshit.

Museums

At monuments and excavated sites where the material so permits, there are site-museums. Thus at present there are thirty-one museums under the Survey and to administer these, there is a Museums Branch (with headquarters at Calcutta) headed by a Superintending Archaeologist, Shri B.K. Dev Burman, with four Regions covering the country, each under a Deputy Superintending Archaeologist.

Archaeological Work in the Various States

Most of the States have already set up their Departments to look after the monuments. These States are: Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Goa, Gujarat, Haryana, Himachal Pradesh, Tripura, Sikkim, Jammu and Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, Orissa, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh, and West Bengal and the Union Territory of Delhi. B.K. Thapar writes, 'Unfortunately, however, not all the state departments are adequately staffed and equipped to pursue archaeological field work.' The State Governments are given by the Archaeological Survey of India such technical advice as sought by the individual States in the matter of archaeological exploration, excavation, conservation of monuments, etc. The nominees of the State Governments are provided training in all branches of Archaeology in the Institute of Archaeology organised by the Survey. In addition, temples which are under religious use and are not protected either by the Central Government or the State Government concerned are under the control and management of the Religious Endowment Boards of the States.

Future Prospects

Some of the outstanding problems of Indian archaeology have been enumerated below. These can be solved by the Archaeological Survey of India, State Departments of Archaeology, Universities, scientists and individual scholars working in the field.

Stone Age

(1) Detailed study of Stone Age remains in Central Himalayan region, including the Shivaliks, which would include correlation of the quaternary glaciation and river terraces in Himachal Pradesh and Jammu and Kashmir.

(2) Search for the physical remains of Early Man in the river valleys of the Narmada, Krishna and Godavari as well as the north-eastern hills.

(3) Detailed work in the rock-shelters in Madhya Pradesh and neighbouring areas of Uttar Pradesh.

(4) Locating *in situ* habitational sites of Early Stone Age phases.

Neolithic Age

(5) Investigations of the beginnings of food production in northern and southern India.

(6) Neolithic cultures of eastern India.

(7) Reconstruction of life-pattern and behaviours of neolithic population of the sub-contiment.

Chalcolithic Age

(8) Correlation of literary data with archaeological records.

(9) Deciphermnent of the Harappan script.

(10) Pre-Harappan cultures vis-a-vis Harappan culture.

(11) Origin and decay of Harappan culture.

(12) Legacy of Harappan culture.

(13) Inter-relationship of various post-Harappan chalcolithic cultures of Upper India.

Historical Period

(14) Regional typology of the megalithic cultures and their inter-relationship.

(15) Details of Early Historic Cities of the Ganga plain.

Medieval Period

(16) Patterns of settlement in various medieval cities.

General

(17) Ancient technology by using latest scientific aids.

(18) Use of ethnographic data for interpretation of archaeological evidences.

(19) Detailed study of the techniques and materials of construction of all types.

(20) Interpretation of utilization tendencies of various categories of artefacts such as pottery, weapons and other utility objects found in ancient deposits.

Till 1947, researches into India's past were guided by the traditional approach which was mainly based on antiquarianism and stress on methodological recording and working out directional changes in cultural patterns and cultural contacts. With the harnessing of the expertise of the natural sciences and the recognition of scientific aids for archaeological studies, a multidisciplinary approach with the help of disciplines like Physics, Chemistry, Palaeontology, Geology, Palaeobotany, etc., was started to be adopted. Here it will not be out of place to mention the tangible contribution made by methods

such as Carbon-14 dating, dendrochronology, and the thermo-luminiscent method of dating in solving the complex problem of chronology.

The aim of an archaeological excavator now is thus no longer a mere description of movable objects or structures but a *reconstruction of the entire life of the people who inhabited the site under investigation.* Attempts were made in the past also to reconstruct the entire life of these people but things were largely *imagined* to fit into some particular models of anthropologists, sociologists or economists. Now-a-days archaeologists do not try to fit their data into anyone else's model; they try to *work out the past* with the aid of several scientific methods and then prepare their own models to reconstruct the past.

The future excavator has not only to study but also to digest the scientific data obtained from archaeological excavations and he should be able to use it with restraint and caution in order to reconstruct the life of man in relation to his environment. He has to be fully equipped to use the material worked out by these sciences in an organic fashion to reconstruct the entire life of a people in relation to its environments — natural, social and cultural. The chapters of an archaeological excavation report written by scientists (belonging both to natural sciences and social sciences) can no longer be treated only as appendices. The report-writer, i.e., the archaeologist, has himself to use the scientific data collected at every step in the writing of his report, although for purposes of giving detailed analysis, he may still continue to incorporate the observations of scientists as appendices also.

Thus, it may be reiterated that science would no longer be the hand-maid of archaeology. Dr. B.B. Lal rightly observes: 'All archaeological explorations and excavations are now broad-based on scientific principles: if people and not things must be dug up, the natural sciences must be given their proper place in archaeology.' However, 'the natural scientist has also his limitations like the archaeologist. With a proper understanding of these limitations and working in close unison, the archaeologist and the natural scientist can succeed in drawing conclusions which would largely, if not wholly, resolve outstanding problems in any archaeological enterprise.'

An objective approach to archaeology as started by Cunningham and maintained by Marshall and his colleagues both within the Survey and outside is to be maintained. Of late, tendencies have been noticed in certain quarters to interpret the known or unknown contents of a culture on local, regional, or revivalistic lines with pre-conceived notions. This is an unhealthy trend and has to be eschewed at all costs. The earlier norms of the Archaeological Survey of India in this regard should be strictly maintained.

Appendices

A. *Mehrgarh*

(Reproduced from *Recent Archaeological Discoveries in Pakistan*, 1988, by Dr. A.H. Dani)

Mehrgarh neolithic evidence. A revolutionary discovery was made later in 1973 by the French Archaeological Mission working at Mehrgarh situated in the north of the Kachhi plain at the foot of the Bolan pass, on the main road connecting the high inland plateau of Central Asia to the alluvial plains of the Indus river system. Mehrgarh provides the antecedents of the Harappan Civilization. Summarizing the results of several seasons of work, Jarrige and Meadow (1980) underline the long duration of the pre-ceramic neolithic settlement in Mehrgarh 3 (MR 3): "More than 700 square meters of the upper Neolithic levels at MR 3 have been uncovered, revealing the plan of the last farming village on the site. The settlement consisted of multi-room rectangular mud-brick units, separated from one another by open spaces that held numerous human burials. Some of the structures were divided into small square compartments, apparently used for storage. Among the artefacts are grinding stones and small flint blades showing the sheen characteristic of flint used to cut grain. This indirect evidence suggestive of agriculture is backed more directly by impressions of various cereal grains in the mud debris.

"From these impressions Lorenzo Costantini of the National Museum of Oriental Art in Rome, who is examining the plant remains from Mehrgarh, has been able to identify several different kinds of grain. They include two-row hulled barley (*Hordeum distichum*), six-row barley (*H. vulgare* and *H. vulgare* var. *nudum*), einkorn wheat (*Triticum monococcum*), emmer (*T. dicoccum*) and bread wheat (*T. durum* or *T. aestivum*). The identifications suggest that Baluchistan was a very early center of cereal cultivation.

"The suggestion has been greatly strengthened by the results of a deep sounding this year [in 1973] that has gone down to the sterile soil underlying

the MR 3 deposit. Some seven meters below the top of the pre-pottery Neolithic strata additional imprints of six-row barley, einkorn, emmer and bread wheat were found. We have not yet been able to get carbon-14 determinations of the age of these lower levels, but we can assume that the deposition of as much as 10 meters of debris on them was not quick. We have therefore tentatively placed the beginnings of the pre-pottery Neolithic settlement at some time before 6000 B.C. To the entire MR 3 deposit we have given the chronological designation Mehrgarh period I.

"Costantini has also identified the remains of plants other than cereals in the Period I deposits. Charred seeds of the plumlike jujube fruit (*Zizyphus jujuba*) and the stones of dates (*Phoenix dactylifera*) have been uncovered, indicating that both trees were food resources in Neolithic times. There are still large numbers of them in the Mehrgarh area today.

"The animal remains are another important source of information about the development of agriculture at Mehrgarh. Within the top two meters of the Neolithic deposit there is a marked shift from faunal assemblages dominated by the bones of wild animals to assemblages, characterized almost exclusively by the bones of domesticated animals. For example, in the earlier assemblage the remains of gazelles (*Gazella dorcas*), wild sheep (*Ovis orientalis*), wild goats (*Capra aegagrus*), swamp deer (*Cervus duvaucelli*), large antelopes (*Boselaphus tragocamelus*) and wild cattle (*Bos*, perhaps the species *namadicus*) greatly outnumber the remains of possibly domesticated cattle (*Bos*, perhaps the species *indicus*) and goats (*Capra hircus*). By the end of Period I, although a few remains of gazelles, wild pigs (*Sus scrofa*) and onagers (*Equus hemionus*) are still present, almost all the other animal remains are those of domesticated cattle, goats and sheep (*Ovis aries*). Since there were wild cattle, wild goats and wild sheep in this part of Baluchistan in the sixth millennium B.C., it would have been possible for the neolithic inhabitants of Mehrgarh to have domesticated all three of these animals. At least in the case of the sheep there is good evidence that the process of domestication did take place locally.

"If the earliest of the faunal assemblages can be assigned an age of about 6000 B.C., the presence of some small and presumably domesticated cattle (*Bos indicus*) in these assemblages would indicate that cattle husbandry began at Mehrgarh as early as it did in western Asia. Furthermore, a number of bones of the water buffalo (*Bubalus bubalis*) have been found in the Neolithic assemblages. They provide the earliest evidence of this animal at a village site anywhere in Asia outside of eastern China. Hence in Period I at Mehrgarh one sees repeated the pattern known in western Asia: the hunters of a wide variety of wild animals are transformed into the herders of a selected few domesticated ones. At Mehrgarh, however, the pattern has a significant variation: the most important domesticated animals are not sheep or goats but cattle."

The graves of these early farmers, herders, and hunters were also uncovered. In the earliest levels, the bodies were buried in both the curved and extended positions and were covered with red ochre. The grave-goods included bead necklaces, anklets, and belts. Among the articles of Mehrgarh Period I, the most abundant are flint tools, which have been analysed by M. Lechevallier and G. Quivron (1981): "Nearly 15,000 pieces of flint have been found in the main excavation. The flint is of good quality, fine and homogeneous; the colour is buff or grey to light brown. It is a blade and

bladelet industry. The cores, except two specimens found in the tombs, are small, pointed, [and] either flat or conical. They show a parallel unidirectional debitage. The tools—2,570 altogether—show a majority of retouched blades (40% of the tools), with various types of retouch, and among them a good number of notched blades and truncated blades. There are a few end-scrapers, hardly any burins.

"The most characteristic tools are the borers and the geometric microliths. The borers (3.8% of the tools) are made by direct steep retouch..... The geometric microliths (3.73% of the tools) are of three types: lunates (17),... very few triangles (3), and trapezes, by far the most frequent (72)..... Sickle-blades are present in relatively small numbers (1.71% of the tools)..... The tool assemblage of the deep trench which on the whole is quite similar to that of the main excavation, shows, however, a few interesting pieces in the lower levels: there are few trapezes, but twice as many lunates and nearly all of them were used as sickle-elements. Besides, there are two large sickle-blades with a denticulated edge, so far unique at MR 3."

Lechevallier and Quivron conclude: "As Fairservis wrote...., referring to the development of microlithic industries, 'a way of life did move to the sub-continent in a period after 9000 B.C. and before 4000 B.C.' MR 3 brings an evidence of this penetration in several aspects. The partly microlithic flint industry, although sharing some common traits with the Indian late stone age, does not seem related to it. It is rather connected with the early villages of the Zagros and the epipaleolithic industries of western central Asia. The presence of turquoise and lapis-lazuli which seem late-comers at MR 3 is another sign of these long distance contacts."

At Mehrgarh four sites numbered MR 1, 2, 3 and 4 were excavated. Period I, yielding neolithic material, has been discussed above. In period II, noted at MR 3, hunting and gathering practically disappeared. In their place, came a cultivation of cereal crops and the husbandry of animals. The excavation yielded more than one hundred bone awls and several of the grooved stones used in shaping their points. Flint tools continued to be abundant. Only one copper ring and one copper bead have been found. It is because of this mixed material that the excavators have identified it as belonging to the chalcolithic period and have dated it to the fifth millennium B.C. At this time, red ochre was highly prized. Excavation revealed several rectangular structures that are subdivided into narrow, doorless compartments, probably used for the storage of food. In the fill of the compartments imprints of wheat and barley grains were found. Two sickles, made of three flint bladelets and set at an angle in bitumen, were recovered. Several hundred charred seeds were found in a large burned area. They included different varieties of wheat and barley and some seeds of cotton. *This is the earliest evidence for the cultivation of cotton in this region.* Animal bones belonged to domesticated cattle, sheep, and goats, with those of cattle predominating. A workshop for beads was also identified. Jarrige and Lechevallier (1979) add:

"Above the fillings of the rooms belonging to this early phase in MR 4, two skeletons with a highly flexed position were visible in the eastern section of the trench, lying on a thick layer of ashes and charcoal. Above the skeletons which were apparently not associated with any object, two meters of loose deposits yielded an enormous amount of potsherds. Half of them are a mixture of straw and clay belonging to pots roughly shaped by finger pressure. The shapes are limited to a tronconical bowl of various sizes and to a flat circular dish with a

grooved surface. This yellowish ware is very fragile and most of the fragments are shapeless. Still hand made but of a better quality are a very small number of vessels with a lower part moulded in a basket. The second half of sherds belongs to a much finer wheel-turned ware. Open bowls and medium-size globular vessels with a collared rim in buff are often decorated with simple geometrical motifs, criss-cross lines, large plain oblique lines, dots or hatched squares. Sometimes, the decoration is bichrome, the motif being painted in black on a red band covering the upper part of the vessel. A few pots have an external slip in red. Close to the surface, the percentage of hand-made straw tempered vessels reaches 60% but this is, maybe, due to the rubbish dump aspect of these deposits. Many bangles, rectangular in section, have been found, made out of the same buff ware. Most of them are decorated with painted lines. Several objects having the shape of big nails have been made in a straw tempered terracotta; their upper extremity is always broken. Many grinding stones [and] a few ring stones have also been found. The bone and lithic industries show no change. One exceptional find is a fragment of a vessel with a collared rim in a fine whitish limestone.

"The painted wheel-turned pottery found in the upper levels of MR 4 shows some definite parallels with the style of Kile Gul Mohammad. The earliest sherds found at Mundigak, in Southern Afghanistan, just above virgin soil, are also very similar. It is worth noticing that stone bowls appear at Mundigak from period 1.2. This would tend to indicate that by the end of the 5th millennium and the beginning of the 4th millennium, the big communication axis connecting the Kachhi Plain, the Quetta Plateau and the Plain of Kandahar through the Bolan and the Khojak Passes did correspond to a vast zone of cultural interaction.

"The occurrence in a very small trench of several thousand wheel-turned sherds from standardized vessels bearing painted motifs indicates that Mehrgarh was already [a]... very active center of ceramic production."

Period III, which was observed at MR 2, was marked by important developments in the art of pottery making. In this period the wheel-thrown pottery was mass produced. The continuity from the earlier period is noted in the geometric motifs and also in the painted bangles with a flattened triangular section. For the first time, animal representation is seen on the pots. They show rows of caprids or birds in procession among registers of geometric motifs. Caprids are also painted in diamond shaped panels or between the branches of extended Maltese crosses. W-shaped motifs which must originally have been stylized flying birds are quite often associated with the animal designs. Among geometric motifs are dot-tipped designs, rosettes, hatched or plain triangles, butterfly patterns, or chequerboard patterns. Bowls have rims decorated with suspended vertical lines or festoons. The excavators have seen in these motifs the source of some of the designs found in the Surab region of Baluchistan. They observe: "The sudden occurrence of painted animal designs on potteries from sites which previously yielded only sherds decorated with simple geometrical motifs has been observed in Iran, in the levels of Sialk III and Hissar IB and IC, in Southern Turkmenia with the beginning of phase Namazga II and in Baluchistan in period III at Mehrgarh, in phase Togau A in Surab region. Despite the lack of accurate comparable C14 dates for all these sites, we are probably in roughly the same chronological horizon." Other objects included a humped bull, an object which resembles a dog, many painted bangles, a disc-shaped pendant, and clay rattles. Agricultural diversification is also seen in this period. An entirely new cereal *genus*, oats,

has also been identified.

Period IV, the beginning of which is dated to 3500 B.C., was encountered at MR 1. Here the plan of a house was uncovered. The two-roomed house with a huge wall has a low door just as at Mundigak. Close to this house a kitchen area was also found. The pottery is remarkable for fineness or sturdiness, but the goat and bird motifs of period III do not appear. Very fine and fragile goblets in greenish ware and medium-sized carinated jars in "wet ware" were found together with big jars. Basins made in greenish buff ware were found everywhere. While the excavators noted painted potteries in three distinctive styles, one with geometric motifs painted in black, one with geometric motifs painted in two colours, and one polychrome (red, black, and white), they do not take them to represent distinctive cultures. They show many parallels in the painted motifs found on vessels of this period with what is called in Baluchistan the Kechi Beg style and the Togau B style. In fact at Mehrgarh, the range of motifs is much larger than that which was previously known. This increase gives a better idea of the ceramic productions of Baluchistan in those periods. This is particularly interesting, since they are now linked with those of preceding periods at Mehrgarh. The variety of decorative patterns and colours are linked with local productions. They by themselves do not constitute distinct cultures, but are only features of cultures known in Baluchistan. These various ceramic styles at Mehrgarh and other sites, during this period and afterwards, reflect contacts and interactions between several ceramic production centres indicating that Baluchistan was not divided into strongly different cultural zones. This observation seems to discredit the theoretical build-up of cultural patterns put forward so far by some archaeologists. In their attempts to see cultural regionalization of foreign patterns, they have built up numerous local cultural zones; but in fact, as Jarrige and Lechevallier point out, they are only industrial centres. The evidence of Mehrgarh has put them in a proper perspective.

The earliest specimens of terracotta human figurines are associated with this period IV. They have a tubular head with a pinched nose, no arms but pendent breasts, heavy hips, and joined legs with a tapering end in a seated position. Among other noteworthy objects is a black steatite amulet.

Regarding period V, the excavators (Jarrige and Meadow 1980) note: "In about 3200 B.C. we reach a period in the occupation of Mehrgarh (period V) that is reasonably familiar from excavations in eastern Iran and western Pakistan. It was once thought to represent the start of regional growth and prosperity; a number of sites in Baluchistan and the Indus valley seem to have been founded at this time. Indeed, before the even earlier cultural phases at Mehrgarh were known, the end of the fourth millennium B.C. was considered to mark the real beginning of developed farming economies in southern Asia.

"The impetus for change in Baluchistan was then thought of as coming from sites in central Asia belonging to the Namazga III phase of cultural development, an impetus that had been mediated by such sites as Shahr-i-Sokhta in Iran and Mundigak in Afghanistan.

"It is now clear, however, that indigenous peoples, among them the residents of Mehrgarh, played an active role rather than a passive one in the transformation of this part of Asia in the first half of the fourth millennium. It is also now evident that even before 3200 B.C. extensive trade networks linked Baluchistan with eastern Iran and southern Turkmenistan. These lines of communication facilitated the exchange not only of goods but also of ideas. The exchanges are reflected in the similar styles of artefacts that came to

characterize this larger region. For example, compartmented stamp seals and a number of complex motifs for the decoration of pottery are the same or similar from one end of the region to the other."

Period VI at Mehrgarh is dated between 3000 B.C. and 2700 B.C., which corresponds with W.A. Fairservis' Damb Sadaat II. The central part of the main mound at Mehrgarh has revealed a plan of rooms and yards full of storage jars, complete pots, grinding stones, and mortars and pestles around fireplaces floored with pebbles. Circular kilns have also been found. This period sees the first occurrence of the "Quetta" ware. Some other motifs also reveal a probable north-western influence: flint leaf-shaped arrowheads, compartmented seals in terracotta, one is stone, and a double spiral-headed copper/bronze, pin. For the first time beads of lapis lazuli, together with a few turquoise beads, have been found. A number of human figurines in terracotta have also been found. These figurines belong to a well-established local tradition and are much more elaborate than the roughly shaped figurines from Shahr-in-Sokhta or Mundigak. It is because of the sudden occurrence of a set of objects or new motifs on the potteries with a north-western origin that the excavators regard Mehrgarh a branch of a wide system of relationship extending from Central Asia to the fringes of the Indus Valley. These new elements reflect probable trade developments which gave a stimulus to local productions at Mehrgarh (Jarrige and Lechevallier 1979).

In the last phase (i.e., period VII) of the occupation of the main mound (MR 1), the excavators reached a period which preceded the Harappan colonization of the Kachhi plain, which is evidenced by the foundation of a large-size Harappan outpost at Nowshero, 4 miles south of Mehrgarh. The period has been divided into two successive phases: the early phase showing a huge monumental mud-brick platform with pilasters regularly spaced alongside a wall. In the later phase, this platform was occupied by intricate buildings, many of which were storage rooms, filled with storage jars and complete pots. A skeleton with the legs in flexed position was also found. Grave-goods included two plates, one below the hands and the other against the arms, and a necklace of baked white kaolin beads alternating with carnelian and lapis lazuli beads around the neck. Bracelets of tiny white beads girt the wrists. Two more skeletons in the northern part of the mound were oriented east-west with heads turned towards the south. Nineteen clay boxes containing skeletons of children were also found.

The period showed a mass production of plain standardized pots, fine tulip-shaped goblets, 'brandy' glasses, piles of plates, and storage jars with collared rims and tapering lower parts on flat bases, comparable with Harappan jars. Two carinated bowls on tall stems in grey ware are exceptional. They are comparable with chalices of Hissar IIA and IIB. As for the painted pottery, pipal leaves remain a popular motif on the open bowls in red ware. "Quetta" geometric motifs of Damb Sadaat III style have been painted on goblets, globular pots, and carinated bowls. The spectacular pottery is the grey ware painted in black. Painted grey ware appears to be a deluxe production. Animal, vegetal, and geometric designs are remarkable for their quality and variety. Running caprids on a background of pipal leaves, fish, sometimes swimming among acquatic plants, and a combination of finely painted geometric motifs are the most elegant. This painted grey ware has a wide distribution from Bampur to Baluchistan through Tepe Yahya and Shahr-i-Sokhta in Iran. Potter's marks appear below the bases of pots from Period IV. In Period VII they become plentiful. Terracotta human figurines

become naturalistic with delicate hands, protuberant eyes, and neckbands. Later, male figurines also begin to appear. By the end of period VII the figurines became more and more rigid and conventionalized, and correspond to the so-called "Zhob mother goddess" style. Two terracotta heads are in a different style and are remarkable for their boldness, their deeply incised semi-circular eyebrows, and slit eyes. Flat, compartmented stamp seals in terracotta, with two suspension holes, follow the tradition already seen in period VI, one having a swastika. A few circular seals or square seals bear cruciform motifs. One exceptional seal bears a running animal, possibly a humped bull. The lithic industry shows survival until the middle of the third millennium B.C.

It may be noted that the Nowshero mound yielded on the surface 80% typical, mature Harappan objects together with a few fragments of human figurines, which correspond in their fabrics and styles to specimens from the uppermost levels of period VII at Mehrgarh. Considering the fact that at Mehrgarh no mature Harappan finds have been noted, except for perforated pots on the surface, Mehrgarh was probably deserted before Harappan colonization. Kot Diji style bands painted around the necks of vases have also been found in the uppermost layers. The excavators conclude from all thee elements that the final stages of the occupation of Mehrgarh was most probably contemporary with the early development of the classical Harappan civilization (Jarrige and Lechevallier 1979).

The following chronology of the seven periods at Mehrgarh and other comparable sites was compiled using Jarrige and Lechevallier (1979) and should be helpful in understanding the cultural relationship among the sites in southern Iran, Baluchistan, and the Indus valley.

Mehrgarh Chronology

Period I Sixth and fifth millennia B.C. Area: MR 3.
Neolithic settlement.
Parallel: Qile Gul Mohammad I.

Period IIA End of the fifth millennium B.C. Area: MR 4
First occurrence of potsherds in a very limited number.
Parallel: Qile Gul Mohammad II.

Period IIB Beginning of the fourth millennium B.C. Area: MR 4 (upper layers).
Wheel-turned ware painted with geometric motifs, straw-tempered hand-made ware.
Parallels: Qile Gul Mohammad III; Mundigak I. 1-3.

Period III First half of the fourth millennium B.C. Area: MR 2.
Wheel-turned ware with painted caprids, birds, and geometric motifs.
Parallels: Qile Gul Mohammad III; Mundigak I. 3; Togau A.

Period IV Middle of the fourth millennium B.C. Area: MR 1 (main mound).
Wheel-turned pottery with monochrome and polychrome geometric decorations, terracotta female figurines.
Parallels: Damb Sadaat I; Togau B; Amri IA.

Period V Third quarter of the fourth millennium B.C. Area: MR 1 (main mound).
Pottery with white pigment, monochrome pottery with geometric motifs, human figurines, first grey ware at the end of the period.
Parallels: Togau D; Mundigak II.

Period VI End of the fourth millennium and beginning of the third millennium B.C. Area: MR 1 (main mound).

Black-on grey ware, Quetta ware, Nal polychrome, red ware with painted pipal leaves, human figurines, compartmented stamp seals, lapis lazuli. Parallels: Damb Sadaat II; Mundigak III; Shahr-i-Sokhta I; Rahman Dheri I; Amri IIA.

Period VII Middle of the third millennium B.C. Area: MR 1 (main mound). Black-on-grey ware, late Quetta style, mass production of female and male figurines. Monumental platform. Upper layers: so-called Zhob figurines, a few Kot Dijian style sherds.
Parallels: Damb Sadaat III; monochrome geometric style of Nal; Mundigak IV; Shahr-i-Sokhta II, Kot Diji; Amri II B.

B. The Development of Protohistoric Research in Pakistan 1970-85

(Paper presented at the South Asian Archaeological Congress, 1986, New Delhi, by Dr. M. Rafique Mughal, Department of Archaeology, Government of Pakistan, Lahore).

During the last fifteen years, there has been a progressive increase of archaeological field researches in Pakistan. These researches have been undertaken by many agencies: Federal Department of Archaeology and Museums, Pakistani Universities and Foreign Archaeological Missions, working in close collaboration with Pakistani archaeologists. Scholars of various disciplines have joined hands with archaeologists to unravel and interpret new information on early civilization in the Greater Indus Valley and Baluchistan. With the new data it is possible to reconstruct outlines of socio-economic organisation of ancient societies in Pakistan, stages of their craft specialisation, and patterns of ancient environment. Detailed documentation of existing information and re-analyses of existing data leads to new interpretations of the evidence and changes the understanding of the ancient cultural environment and inter-related functioning systems. The new information on the protohistory of Pakistan covers a very long spectrum of time from the seventh to first millennium B.C. and therefore, it is impossible to summarise or review all of it properly within the limits of this paper. It is also not possible to discuss here the various strategies adopted for possible solutions of archaeological problems. However, an attempt is made to outline the major issues involved in the protohistoric research of Pakistan and significance or implication of new evidence so far found. The present treatment follows the accepted periodization of South Asian protohistory.

The Neolithic Period

On the present state of knowledge, the Neolithic assemblages in Pakistan can be grouped under two broad regions (i) Northern or upper Indus Valley and (ii) Baluchistan Plateau. From Baluchistan and its foothills comes a continuous development sequence from the seventh millennium B.C. to the beginning of the Indus or Harappan Civilization during the fourth millennium B.C., the development which eventually altered the cultural pattern of the entire Greater Indus Valley until the second millennium. The evidence from the upper region is diverse and comes from Swat, Taxila and Gomal valleys but is still limited in contents and insecurely dated with the exception of Taxila and Swat. The evidence associated with Sarai Khola I and Leobanr III or Swat Period III-IV shows a different course of cultural developments in their own micro environments from that of Baluchistan and its piedmont plain.

Northern or Upper Indus Valley

The Neolithic assemblages in the upper Indus Valley have been excavated

at Gumla in the Gomal Valley (Dani 1970-71), Sarai Khola in the Taxila Valley (Halim 1971, 1972 and Mughal 1972 d) and mainly at Leobanr III and Ghaligai in Swat (Stacul 1969, 1976, 1977 and 1979). Those from Leobanr III, early levels of Aligrama (Stacul and Tusa 1975 and 1977) and Ghaligai III-IV, constitute one group and show stylistic comparisons with that of Sarai Khola I. The lowest layer of Gumla has yielded mostly lithic material apparently derived from the Neolithic tradition. The hand-made red burnished and plain wares with basket impressions as found in Sarai Khola I associated with celt and bone points afford parallels with the Neolithic sites of Swat Valley where similar technique of pottery and tools is found, though the burnished pottery is generally black. The Swat Neolithic also includes beads of jade, stone mace heads, stone shaft-holded harvesters and cult figurines in the fire places built in the dwelling pits. These features are the same as are also found at Burzahom and Gufkral in Kashmir and in turn, belong to the Yang-shao Neolithic tradition of China (Mughal 1972 d; Thapar 1984). The Kashmir Neolithic appears to have started at Gufkral at an early date which may go back to the first half of third millennium B.C. A wheelmade vessel painted with horn motif in its level IC provides an indication of contact with the Early Harappan settlements such as Kot Diji, Sarai Khola and in the Gomal Valley. The Swat Neolithic materials grouped under Period IV also show contacts with the Greater Indus Valley at least in the painted pottery that has Harappan designs, and a plain vessel of Kot Dijian type, which in Swat are later in date than those of the Indus plain. Barley, oats and rice are found in this period.

Baluchistan Plateau

Our knowledge of the earliest known human settlements assignable to the Neolithic period has increased considerably during the last ten years as a result of extensive field work in the Kachhi plain of Baluchistan. Previously this stage was recognized only at Kile Gul Mohammad in the Quetta Valley where it was dated around fifth millennium B.C. The new evidence from Mehrgarh has extended our knowledge back to at least seventh millennium B.C.

The Mehrgarh Period I is aceramic in which many animal species, namely, gazelle, black buck, swamp deer, spotted deer, *nilgai*, onager, water buffalo, wild cattle, sheep, goat, pig and elephant have been identified (Meadow 1981 and 1984). The presence of *Big Indicus* is also attested in the aceramic levels. In the same contexts, six raw barley constituting 91% of the total samples recovered and small percentage of wheat of hulled varieties have been identified. (Costantini 1984). The discovery of cotton seeds in Period II dated between 5000 and 4500 B.C. is very significant. Public buildings like multi-roomed granaries, and evidence of craft specialization and long-distance exchange have been found, suggesting a functioning level of socio-economic organization at such an early period.

The Period II of Mehrgarh with its three sub-divisions covers a millennium between 5500 and 4500 B.C. when average Radiocarbon dates are applied (Jarrige 1981, 1982 and 1984; and Jarrige and Lechevallier 1979) though on the basis of typological comparisons, a short time range between the end of fifth and early fourth millennium B.C. is also suggested (de Cardi 1984). Whatever the differences in time range, Mehrgarh Periods I and II have yielded very significant information on the Neolithic in Pakistan. The Neolithic recognized in Kile Gul Mohammad I falls somewhere between the sequence of Mehrgarh I and II around 6000 B.C. On typological grounds, the lithic assemblages of Anjira I would compare with Mehrgarh II and that of Anjira II

with Mehrgarh III, indicating that nothing comparable to the earliest levels of Mehrgarh was previously known in Baluchistan.

The succeeding Period III at Mehrgarh is contemporary with Kile Gul Mohammad II-III and Mundigak I in which the Togau style of painted pottery appears with increased number of wheel-made ceramics as distinct from the chaff-tempered pottery of late levels of Period II. The formal plan of granary and other elements of early periods still persisted.

The Early Copper/Bronze Age Period in Baluchistan and the Indus Valley

Archaeological evidence pertaining to the Copper/Bronze Age in Baluchistan has been known from several sites in central and northern Baluchistan where excavations and surveys were carried out more than thirty years ago. Thus the sequence of Damb Sadaat (DSI-III) in the Quetta Valley, Anjira III-IV in Kalat, Nal polychrome and monochrome pottery, the Loralai sequence as known from Rana Ghundai and Sur Jangal (SJ I-III), all compare with the evidence of Mehrgarh Period IV to VII; a horizon which in the Greater Indus Valley falls within the Early Harappan Period. Amri Period IA-ID and IIA and B and contemporary Amrian sites in the Indus Kohistan area in south-western Sind fall within the same time bracket of fourth and early third millennia B.C.

Further explorations were done in the Zhob, Loralai, Quetta and Kalat Valleys (Mughal 1972a and 1974a) and additional information relevant to the fourth and early third millennia B.C. period in Baluchistan was collected. In the southern part of Baluchistan, the site of Balakot (Dales 1979 and 1981; Meadow 1979) has provided a chronological framework for the early sites of southern Baluchistan where no proper excavation on extensive scale had previously been carried out. In the south-east, the Indus Kohistan region was explored intensively and significant information on subsistence and settlement patterns during the early 3rd millennium B.C. was collected (Flam 1981).

Of the fourth millennium B.C. and possibly earlier period, an assemblage of distinctive handmade and wheel-made pottery associated with bull and cow figurines, bangles of shell and terracotta, copper, and lithics consisting of blades with reworked edges, micro blade, and leaf shaped arrow heads has been discovered in the Indus Valley. It is new to our knowledge and had been tentatively called Hakra Wares after the area of its discovery as well as concentration. In the Cholistan desert, 99 sites representing temporary and permanent occupation have been recorded (Mughal 1981, 1982). The Hakra Wares includes such pottery as in technique of surface decoration compares with that found at the earliest levels of Jalilpur located on the bank of Ravi and with the Amrian levels in south-eastern Sind. Further search towards north-east into Rajasthan has shown identical pottery recorded at RD 89 in Anupgarh Tehsil (Dalal 1980).

The Early Harappan Period

It was not a coincidence that most field researches since 1970 have been concentrated on further identification and elaboration of the early developmental stage of the Harappan or Indus Civilization. A detailed analysis of the available evidence uptil 1970 from the early sites of the Greater Indus Valley and northern Baluchistan had clearly delineated those archaeological assemblages which constitute an early urban stage of the Indus Civilization (Mughal 1970 and 1983) but additional information was needed to fill in many details. Thus an intensive field work was launched at carefully selected sites oriented

towards this very fundamental issue. At the same time, explorations were carried out in man regions to supplement our information on settlement patterns during the Early Harappan period for comparison with the later phases of the Indus Civilization.

The explorations of Bannu Basin and Gomal Valley (Dani 1970-71 and Durrani 1984) and Taxila Valley (Mughal 1972b) have revealed more sites with materials comparable with those of the type-site of Kot Diji (Khan 1965). In the survey of northern Baluchistan carried out in 1971 (Mughal 1972a, 1974a), Kot Dijian ceramics were identified in the Zhob, Loralai, Quetta and Kalat regions. Kot Dijian sites are also reported from the central and north-western Punjab in Sheikhupura and Mianwali districts (Dar 1983). In eastern Sind, extensive explorations were carried out by Dr. Mohammad Sharif and wide range of settlements and monuments were recorded between the Indus River and Thar desert (Mughal 1972c). A Harappan site was located at the mouth of Kuri Creek (Khan 1981). The Kirthar hills and Indus Kohistan areas and the piedmont plain of western Sind were intensively surveyed in late 1970s and produced new information on ancient environment and subsistence patterns during the Early Harappan Period (Flam 1981). The most outstanding contribution to the knowledge of Indus Civilization and changing settlement pattern during the Early, Mature, Late and even Post-Harappan Periods was made by extensive but systematic archaeological surveys conducted in the east-central part of Pakistan lying in the Cholistan desert which was originally drained by the Hakra River. Four years of field work yielded more than 400 sites ranging in date from the fourth to first millennium B.C. (Mughal 1981, 1982 and 1984). These discoveries in Pakistan when studied with those made in the adjoining region of Indian territory (Bhan 1975; Bhan and Shaffer 1978; Shaffer 1980; Dikshit 1982 and 1984; Dalal 1980; Joshi 1982; Joshi *et al;*, 1984; Sharma 1982) have contributed substantially to the knowledge of early developmental phase of Indus Civilization.

Along with archaeological surveys in Pakistan, many sites of the late fourth and early third millennium B.C. falling within the Early Harappan Period of the Greater Indus Valley were excavated to find details of material culture and evidence relevant to the reconstruction of socio-economic organisation of ancient populations. These sites are Gumla (Dani 1970-71), Rahman Dheri (Durrani 1981) in the Gomal Valley, Lewan and Tarkai Qila in Bannu Basin (Allchin and Knox 1981 and 1981 a; Allchin 1981), Jhang, Hathial (Allchin 1982 and Khan 1983) in the Taxila Valley and Jalilpur (Mughal 1972 & 1974) in the central Indus Valley. In southwestern Sind, the site of Ghazi Shah is being excavated at present. The Early Harappan evidence excavated from those sites in Pakistan also provides comparisons with those at Kalibangan in northern Rajasthan (Lal 1979; and Thapar 1973), Mitathal and Siswal in Haryana (Bhan 1975) and Banawali (Bisht and Asthana 1979).

The Mature Harappan Period

The last 15 years have seen a marked shift in the strategy of field research on the Mature Harappan sites in Pakistan. Firstly, the emphasis was laid on small sites located in their micro-environments as distinct from the flood-plain of the Indus river valley. Secondly, instead of attempting further excavations at large urban settlements, attention was especially concentrated on the careful examination of existing features and re-study of available information on Mohen-jo-daro with application of new techniques of research for re-interpreting the evidence afresh. Thirdly, explorations were conducted to

discover and document Harappan sites in such areas where the original settlement pattern has remained undisturbed.

Two mature Harappan sites located in two different physical environments were taken up for excavations in 1970s. Allahdino located in the Malir river basin near Karachi yielded interesting evidence of a village functioning during the Mature Harappan Period with specialized activities and efficient utilization of water resources. The lithic materials indicated lingering tradition of the Neolithic Period (Fairservis 1976, 1977, 1982; Hoffman and Cleland 1977). Balakot, another Mature Harappan site near the Sonmiani Bay in Lasbela district of Baluchistan, provided exciting evidence of sudden shift in subsistence base from agriculture to the exploitation of marine resources at the beginning of Mature Harappan Period (Dales 1979, 1981; Meadow 1979).

For the last seven years, detailed documentation of the exposed structural remains of Mohen-jo-daro and excavated antiquities both published and unpublished has been in progress (Jansen 1984, 1984a). The study of field registers, photographs and site reports pertaining to the old excavations and fresh recording of unpublished information are included in the ongoing field project which has now become multi-dimensional and multi-disciplinary. The team at Mohen-jo-daro now enlarged with inclusion of specialists from many countries have added new perspectives to this urban centre of the Indus Civilization with their studies (Bondioli and Tosi 1984; Halim and Vidale 1984; Kenoyer 1983 and 1984). The remarkable results being obtained at Mohen-jo-daro without excavating a bit point to the approach with which ancient sites could be studied.

The Bahawalpur survey has added 147 sites of the Mature Harappan period to the archaeological map of Pakistan. In the Cholistan area in particular, a shift in their location from the earlier period provides firm basis to determine changing river courses which could have brought changes in the socio-economic organization of the people. The size of settlements also increased among which one site, Ganweriwala spread over 81.5 hectares. The most significant feature recognised on the Mature Harappan sites in Cholistan is an increase of craft activities on or near the settlement areas or separately. The work done in the adjoining areas between 1976 and 1981 near Jammu and in parts of Haryana and Punjab (Joshi 1982; Joshi, Bala and Ram 1984) has added to the existing corpus of Harappan sites for reassessment of the Harappan settlement patterns in the Greater Indus Valley (Fentress 1982).

In the Kachhi plain the Harappan site of Nowshero will soon be excavated to enlarge the sequence of Mehrgarh which seems to end by the middle of 3rd millennium B.C., almost coinciding with the rise of large urban centres in the Greater Indus Valley. Detailed documentation and research is going to be started at Harappa. The extension of the Harappan traits in northern Pakistan is reflected by the painted pottery found at Ghaligai in Swat Valley, a region which was in contact with the Indus plain during the Early Harappan Period (Stacul 1984; Stacul and Tusa 1975, 1977; Tusa 1979). It is to the mature Harappan Period that an outpost of Shortughai located near Badakhshan in north Afghanistan belongs (Francfort 1984), though occupation continued at that site in the later period.

The Late Harappan Period

Efforts have also been made to investigate the socio-cultural changes during the second millennium B.C. which are evident by the material culture assigned to the late Harappan Period. In Pakistan, these materials are mainly

confined to two areas; the northern or upper Indus Valley with Harappa as the principal site where Cemetery-H and comparable materials were found at Mound AB, and the southern Indus Valley where Jhukar and contemporary sites are located. Field work has been done in both the regions.

In the upper Indus Valley, Cholistan desert has revealed an impressive number of fifty sites related and contemporary with Cemetery-H occupation at Harappa. Some of the sites are 20 to 38 hectares in size and stand up to 15 meters height. Although none has yet been excavated, a study of surface features has provided information on functional articulation of settlements. The materials from the late Harappan sites in the upper Indus Valley afford parallels with sites in eastern Punjab, and Haryana and further eastwards in India among which Manda (Joshi and Bala 1982), Dadheri and Bhagwanpura have recently been excavated. Further explorations in Pakistan since 1970 have filled in gaps that existed previously in the extent of late Harappan settlements in northern part of South Asia and have also provided evidence of continuity of the Harappan Civilization at least up to the end of second millennium B.C.

In the lower Indus Valley, the Late Harappan materials existed on the upper levels of Mohen-jo-daro but were not emphasized properly (Dales 1982). These compare with those from the upper levels of Amri and Chanhudaro. These materials are commonly known as "Jhukar culture", first identified at Jhukar near Larkana and later on extensively excavated at Chanhudaro. The site of Jhukar was taken up for excavation in 1973-74 and confirmation of continuity of the Mature Harappan traits in the later period was achieved. The pottery sequence has not yet been published but a preliminary study indicated that most of the Mature Harappan pottery types continue in the upper levels assignable to the Jhukar culture. It is significant that despite apparent changes in the materials of the Late Harappan Period in both the southern and northern Indus Valley, such changes do not compare with each other, though the Harappan elements which persisted remained unchanged.

To this Late Harappan Period of second millennium B.C. belongs the Sough Cemetery at Mehrgarh and Sibri in the Kachhi plain which has yielded abundant materials comparable with those from Bactria, Margiana and south Turkmenia and even with Shahdad region. Tepe Hissar and Afghan Seistan (Santoni 1984). Its discovery has at once placed scattered objects from Baluchistan and the Indus Valley which were referred to in various discussions on the decline of the Indus Civilization into their correct chronological and cultural perspective.

Late Second and First Millennia B.C. or the post–Harappan Period

The period following the decline if not disappearance of the Indus Civilization, between the second half of the second and first half of the first millennium B.C., is marked with diversity in cultural manifestation and areas of concentration in Pakistan which has provoked considerable discussions.

Field research in the Kachhi plain of Baluchistan had revealed a distinct material assemblage at Pirak dated between 1700 and 600 B.C., which is thought to indicate continuity from the protohistoric periods (Jarrige, in press, with further bibliography; and Costantini 1981). In southern Sind, a grey ceramic type labelled under the site-name of Jhangar and found also at Lohumjodaro and Amri is thought to fall somewhere within the first millennium but its relationship with the earlier 'Jhukar Culture' is still not known until a suitable site is excavated. However, in the upper Indus Valley, extensive explorations and excavations during the last fifteen years have made

a significant contribution to this phase of Pakistan's protohistory.

In the Frontier region of Pakistan, a great number of sites have been discovered in Swat, Dir, Chitral and Peshawar valleys, some of which were subjected to systematic excavations (Antonini and Stacul 1972; Dani 1967; Khan 1979; Stacul 1966, 1969a and 1970). They represent extensive cemeteries called "Gandhara Grave Culture", containing inhumations, cremations and urn burials with funerary pottery and various objects of copper/bronze, shell, terracotta and stone. The Radiocarbon dates and archaeological evidence place these cemeteries within 1300-500 B.C. Iron is found in the burials of later period around 500 B.C. whereas at Pirak, it is reported from 1200 B.C. contexts. The Gandhara Grave complex is thought to be associated with the movements and settling in of the Aryan speaking people in northern Pakistan. The settlement sites of this period are under excavation at present in Swat.

In east-central Pakistan, explorations have thrown light on the early first millennium B.C. cultural mosaic of the Indus Valley. Fourteen Painted Grey Ware sites have been located near the region where early sites of this complex are found in India. There is an apparent profusion of Painted Grey Ware sites further to northeast and in the Doab (Tripathi 1975), a number of which have been excavated to some degree. Of interest is the debate on the association of Painted Grey Ware sites in northern South Asia with the Aryan speaking people to which new discoveries of Gandhara Grave complex in northern Pakistan have added a new dimension.

Northern Areas

In addition to the protohistoric research in the Indus Valley and Baluchistan, the Pakistan-German team has been conducting very extensive field work in the Northern areas of Pakistan for the last eight years. As a result, an enormous amount of epigraphical, linguistic and archaeological data of great cultural and historical significance is being documented. In course of field research, sites of Neolithic and second-first millennium date have also been recorded. The new information has enabled the archaeologists to re-interpret many isolated objects of protohistoric period reported from the northern areas a long time ago (Mughal 1985).

C. Chilas

Chilas, the premier city on the upper course of the Indus river, stands under the shadow of the world famous Nanga Parvat, known to the people of old as Dyamar (correct Diva-Meru—Heavenly Mount) and is the headquarter of Dyamar district. The whole of the Karakorum zone, as far as human habitation is concerned, is broken up into numerous river valleys where man has lived for centuries in isolation and preserved for posterity the languages of old, the cultures of old and the living patterns of old. It is here that a cross-section of history can be viewed and appreciated. But Chilas is an exception. It is right on the Indus commanding an opening on the Indus for nearly 128 km. and facilitating a traditional crossing of the main Indus river and taking the pilgrims from the north, in which direction lie Gilgit and the trans-Pamir countries, to the south over the Babusar pass towards the ancient city of Taxila and the Indus plains. Chilas really lies at the cross-roads of communication and also of history.

In ancient times, Chilas was the name of the *Vishaya* (district). Alberuni calls it Shiltas, and in a rock inscription of sixth century A.D. at Chilas itself, it is spelt as Silavata. In Sanskrit, *sila* means rock or stone while in the local Sina language "*vata*" also means stone. Hence Silavata means Rock or Hill (region)

of stones. The name of the city in the same inscription is given as Somanagara, i.e., The City of Moon. This name is also found in a second inscription of the fifth century A.D. at Thalpan bridge, where the full reading is Vira Somanagara, i.e., The Heroic City of Moon.

In the vicinity of Chilas where the Thalpan bridge now stands, on either side of the Indus river, rock-carvings abound and they present to the visitor the little carved memorials of old on stones that the travellers left behind as a mark of their visit. There is a large concentration of carvings and inscriptions on the eastern bank of the Khinnar *nala*. On its western bank, there is a group of black boulders, all hustling together in a pile. On several of them, there are engravings of prehistoric people and also of the temple carvers.

Mainly basing on archaeological data, Dr. Ahmad Hasan Dani, one of the seniormost archaeologists of the sub-continent and a noted Sanskritist, has reconstructed an account of the history and culture of the area in his book *Chilas, The City of Nanga Parvat* (Dyamar), Islamabad, 1983. The following account of the important discoveries made by him is given in his own words:

'The prehistoric carvings consist of a palm impression on the easternmost rock, then a primitive man running behind an animal throwing stones at it. Next we see simple bottle-shaped temples crowned by *trisula* finial, another late drawing of standing primitive man with upraised hands, three horn-headed symbol and a mounted horseman holding bow and arrow before a little *trisula*-topped temple. The temple has three receding tiers with a dome and a supporting staff ending in a *trisula* finial and banners only on one side. Then comes another bottle-shaped temple with late Brahmi inscription, reading *Brahmanasya, i.e.,* "Of Brahmana". Finally on the extreme right we have two advancing soldiers with loin cloth tied at the waist and armed with sword and shield. They are in the attacking mood. A second big boulder, inclined towards the *nala*, has an inscription in late Brahmi, reading:

Revatisarmanasya, i.e., "Of Revatisarmana." The third group of boulders still on the river side have carvings of simple temples on five of them, and some have hunting scenes. On one rock four standing humans are shooting at markhors. On another boulder we have two mounted horsemen. On its other face there is a single markhor. This rock pile has a concentration of markhor carvings.

'As we rise higher up on to the pilgrim path, we witness the Thalpan plain spreading west of the Khinnar *nala*. At the foot of the hill are old demarcations of fields. At a distance the Khinnar winds down and joins the Indus. At the junction, on its either side, are little hillocks full of carvings and inscriptions. The modern village path traverses the sandy plain. In this plain there are several boulders carved with *stupas*, temples, mounted horsemen, ibexes and other animals and inscriptions. On one of them some *stupas* have been engraved on the right and a Chinese inscription of two symbols on the left. Just close to the bottom of the hill we see the stone walls and some Muslim graves of the abandoned Thalpan village. This abandonment appears to have been caused by torrential flood in the past when the plain was strewn over with sand and the hill slope washed down. As we look down from the eastern height, we witness a great erosion of the hill by some torrent in the past. The erosion has hurled down big boulders into the plain. Hence no rock is available for carving here. But at one place there is a factory site for working quartz flakes. Such flakes can be picked up all over the hill slope.

'We cross the eroded portion and come to the next height of the hill where we see a circular hollow made by nature. It is like a circular cavity in the rock, large enough to accommodate some engravers to leave their carvings on the

innerside of the rim. Within this rim there is an unfinished base of a *stupa*. On its left is a terraced *stupa*. Still to the left is the Gandharan type of an unfinished Buddha, the like of which have been noted earlier. These two are seen further down the hill on two separate boulders. The present example has his hands unfinished, drapery covering both the shoulders with a triangular ring around the neck and folds falling over the knees, eyes half-closed and chin small. *Ushnisha* (top knot) is on the head but the hair is not profusely shown. The halo, of a single line, is around the head only. The ears are distended.

'As we walk ahead, we meet with several carved temples on way. Onward a circle is seen, then a temple structure standing on two terraces and having a crude *sikhara*. Next is a triple temple on a plinth. On a lower level is a single temple of Silamedha. Still lower down an unfinished temple in outline, and further ahead a triple base with a dome ending in a triple arch. We climb down further and see a broken boulder having a *stupa* resting on three tiers. Going ahead, we have a good example of a temple having a *sikhara* with bell attachments, an unfinished structure on the left and three unfinished ones a little below on the right. Another boulder, rolled down from top, has an unfinished carving, meant for representing seated Buddha. But this example differs from the one in Chilas II in so far as the present carving does not close the shoulder below the head to appear like a *stupa*. Further ahead is another temple on a triple base. Then we come to a beautiful temple on six terraces with its semi-dome, *harmika* and *sikhara*, all forming a continuous construction. Particularly the *sikhara* has a tapering spire with parallel lines inside, almost a prototype of the temple of the mediaeval period. But in the present case we have a lion capital, one each on either side. On a higher level we see a big *stupa* with a dome resting on four tiers.

'We then pass a second erosion of the hillside. On one boulder we have a beautiful *stupa* resting on four tiers having five umbrellas supported by side struts. This is the *stupa* of Dharmapriya according to an inscription. Another boulder shows a peculiar temple on three terraces and three semi-domes, one on top of the other, each containing several dots. Then we come to the carving of Vinisama Brahmana. After some more temples we come to a boulder showing a handsome elephant on the left with a name in Brahmi *Sri Vichitra*, and a duck on the right with an inscription reading *Om vicharati vatakasa*, i.e, "OM". "The duck moves about". On a nearby boulder we have a domical structure on two terraces. Then we come to the engraving of a lotus on altar with inscriptions, already described.

'We come now to a third erosion which has floated down a heap of boulders in the plain below. One of them has a temple (*divira*) of Jivadharma. Then we come to a *stupa* with an inscription affirming faith in the triple formula of Buddhism. Another inscription nearby reads: *Vimalasenasya dhamadana, i.e,* "A religious gift of Vimalasena." Further down at the foot of the hill there is a pile of boulders showing a big *stupa* on five terraces topped over by a crescent and a circle on a long staff. Still above there is an inscription in the developed Brahmi of 9th century A.D. reading:

Subhra sagara, Paradaravarhita, Vinitasvabhava, Sumitra-paksha, Paramesva (ra)

"The great lord (having qualities of) a clear sea (i.e. water), avoiding other's wife, humble by nature and partial to good friends." Who is this *Paramesvara* is not clearly stated unless, of course, it refers to Siva."

On the top there are two more *stupas* of similar type with an inscription—*Rudraguptasya*, i.e., "Of Rudragupta." Still above is an unfinished figure of the Buddha, contained within a trefoil halo. His one hand is in the *abhaya*

(fearlessness) pose and the other is holding the hem of the garment. Still further there is a beautiful temple with its dome resting on four receding tiers and finial consisting of a *trisula*, from which hangs down a banner. After a series of temples, we come to a remarkable structure by the side of a small votive temple. The structure has a domical body resting on a base. On its top is an abacus, probably meant for an altar, on which rests a semi-dome to serve as a sanctum, and again we have a domical cover. Further ahead is the representation of a devotee with his folded hands in worshipful pose. Next we come to a place where we have four *stupas*, the left two being incomplete. The right two are complete with an inscription on top, reading *Namo Buddhaya*, i.e., "Salutation to the Buddha." The *stupas* have a series of tiers, dome, *harmika* and umbrella in a triangular form with flying banners. Several more *stupas* follow on way, some having short inscriptions. Still further we come to a place where a long inscription praising the Bodhisattva Avalokitesvara is engraved. After passing through a number of structural engravings, we come to a place where we have four names written in the mediaeval handwriting:

Chitrasimgha, Chashisimgha, Kirina and *Palida.*

These names are similar to those which occur near the long inscription of the Sura family at Chilas I.

Further ahead we get the following three line inscription in evolved Brahmi:

Om namo (prati) shthita dharmarajaya tathagataya
namo sadguruvisvangata-Sri-kripa (ni) dhaya tathaga—
taya namo karunasya (karaya) tathagataya

"Om, Salutation to the established king of *dharma*, the Buddha, Salutation to the great teacher, the receptacle of kindness encompassing the whole earth, the Buddha, Salutation to the Buddha, (the bestower of compassion)."

'On one boulder along this path there is a representation of a beautiful horse, unsaddled but having a bridle. The legs, tail and head are in a posture showing the horse in a prancing mood. The body of the horse is pecked. It recalls the type known from China in the T'ang period. A second representation of a horse on the flat surface of a rock near Thalpan II shows the trotting horse fully caparisoned and decorated. The noble lines of its body, the gentle curve of the neck and muscles are all drawn in a realistic fashion. These two horses represent an entirely different type from the horses seen earlier. They appear to be works of foreign artists. There is a third horse, but not so well drawn. Nearby is a palm impression.

'As we proceed westward along the foot of the hill, we see a beautiful carving of the Dhyani Buddha seated under a tree. Further ahead are two more inscriptions in developed Brahmi recording the names of two Bodhisattvas thus:

Om namo Virochana-tathagataya, i.e., "Om. Salutation to tathagata (in the form of) Virochana."

Namo prajnaparamitaya, i.e., "Salutation to Prajnaparamita."

'Still further is a pitiful carving of a goat in outline bitten by a snake at the right hind leg. Further ahead we come to a place higher up along the pilgrim path and see several crude *stupas* and temples drawn on a rock by the side of a room, shown in simple lines, within which is placed a bed. Is this bed connected with some story of the Buddha? If it is so, it may represnt his *nirvana*. At several places on the rocks we find a series of small cavities arranged in some order. One of them is having thirty such holes, arranged six in vertical

row and five in horizontal row. At several places we get a *purna-ghata* (lucky jar) full of flowers. One of them has an inscription reading:

Om Sri sampurnaditya-nandina

i.e., "Om, The glorious joy of a complete *aditya* (sun-lotus)."

There is also a stupa erected by pot-makers as an inscription below it attests:

Om namo Buddhaya kumbhakarasya

i.e., "Om, Salutation to the Buddha of pot-maker (s)."

'Further ahead is the pile of the "Altar Rock". On the surface of one nearby rock we have two rows of crude simple *stupas* (or temples), six on the top row and four below. The purpose of erecting them in rows is not very clear. Right above this "Altar Rock" the pilgrim path passes by a boulder on the top of the hill, which has been deeply patinated. It bears impressions of palm and foot.

'The path follows westward and crosses several dry beds of *nalas*. A second steep passage from the "Altar Rock" joins now directly with this path. This was an old passage that led to the abandoned village of Thakot to the north of Ziarat site. Where this passage ends, there is a big boulder serving as a rock shelter to the shepherds that pass nearby. Near this big rock there are several carvings. We first get a simple later horse with its tail upward. Another boulder has a simple *stupa* under a modern writing. To the left of the path there are two simple *stupas* right on the top surface, one horse-rider and a lotus. A nearby boulder has two terraced *stupas*, one plinth and one human. On the other face of this very rock there is a hunting scene. There are two markhors on the left facing each other. One man is shooting at the ibexes, which are five in number. Another big ibex is on the top. In the middle a circle is drawn around an ibex. Two men, one on top and another on right, are in the act of catching the ibexes alive. There are more boulders with carvings of animals. Another boulder has a simple *stupa* and two ibexes. Three Brahmi inscriptions of 5th, 6th and 7th centuries respectively read *Dharmasena, Priya Vishnu,* and *Devadharmoyam*. The first writing shows triangular headmark in the forms of the letters. Another boulder has an inscription of 5th century A.D. reading:

Ayotakasya Sri Prakiditi (?) i.e., "Of Ayotaka. Sri Prakiditi." Right on the foot-path is a Kushana Kharoshthi inscription, reading *Dasasa*, i.e., "Of Dasa". Below is a dim archaic man and an ibex. Another boulder ahead shows a horseman, ibexes and a man holding an animal in his right-stretched hand. Nearby there is a concentration of black coloured stones bearing several carvings: an inscription of fifth century A.D. reading Sri Vipakshamaka; three simple asses, one human, ibexes, and another fifth century writing, reading *Sri Ravana*; a hunter shooting at an ibex. Below the ibex a word reads *Vaka* in 8th century writing and among other inscriptions we have the important inscription of *Divira Mahaprabhu*. Another rock has two solid foot-prints of the left foot in the archaic style. Further ahead we have a *stupa* and two temples. Then we have the following inscription in 5th century writing:

Jivaka Chandramana Kinivasya dhama

i.e., "The *dharma* (*dana*, i.e. gift) of Kiniva Jivaka Chandramana." Another inscription below reads *Dharmapriya Phahikena*, i.e., "By Phahika, beloved of *Dharma.*" There is another big boulder having two inscriptions in the 5th century writing, some letters showing triangular headmark:

On top: *Sri Sri Chandravarmanah.*

On bottom: *Dharmaghosha-dana punyartha.*

The first is just a name while the second means "the gift of Dharmaghosha (for) the attainment of merit."

'On top surface of this big boulder there are several *stupas*, rows of ibexes, markhor, serpent and a human in long coat. On the eastern face a name is written *Jayachandradivakara*. Another small boulder has Jivachandra in the 5th century writing. One rock shows a beautiful sheep with curved dented horns. Then we come to a big boulder showing the cultural milieu of the Battle-Axe people. Several more boulders come in between, bearing carvings and inscriptions and finally we reach the site of Ziarat I.

'To the south of the Muslim grave there are several boulders on the edge of the higher terrace. Two of them bear prehistoric carvings. One boulder has archaic carvings below later *stupas* and the second has two faces. It is on the western face of the second rock that we have the so-called "River-god". To the right a boulder has a late Brahmi inscription, giving the name of *Losarideva* and another has *Budivira*.

'We cross another dry *nala* and come to a boulder having an inscription, reading *Balavira* in 8th century writing. Another inscription below an engraving of a man riding on a peculiar horse, reading *Vijaya vari* (probably *vahi*), i.e., "conquest of vari or vahi". This type of inscription is seen at the Sacred Rock of Hunza. We cross another *Das* and come to a stone engraved with a standing human and a later inscription, reading *Brahmanasya,* i.e., "Of Brahmana". Then we reach the site of Ziarat II. Here we have numerous prehistoric carvings. It is here that we have the Central Asian devotee worshipping a *stupa*.

'After crossing another dry *nala* we come to a small boulder bearing a late Brahmi inscription, reading *Chandravarmasya*, i.e., "Of Chandravarma". Another dry *nala* is crossed and we come to a place where a horse-rider is engraved in archaic style. A series of boulders show late carvings of standing human, solar symbol, markhors, ibexes and horses. Another dry *nala* is crossed and we come to two old graves covered by small pebbles. Not far from this place are the boulders, engraved with circles, one human touching a circle, mounted horsemen, eagle and earlier palm prints. A small boulder has a Sogdian inscription written from top to bottom associated with a late *stupa*. Other boulders have late Brahmi inscriptions, reading:

Devadharmoyam Vrinena, i.e., "This is the divine *dharma* (made) by Vrina."

The name *Kuverasena* is written twice. And finally we have *Om Vanavurena*.

'We then descend to the lowest terrace of the Indus river, where we have a historical period cave made by the weathering of the cemented gravel of the older terrace. Actually there are two caves, a bigger one and a smaller one. Both of them have been chiselled from inside probably by the Buddhists. In front of the cave there is flat rock bearing carvings of horsemen, ibexes, circles and temples. Inside the big cave a lone Brahmi word in 6th century writing reads *Sri*. The smaller cave has no inscription. On a boulder immediately above the cave a late inscription of 6th century reads:

Kuladiva Kulakagaputra, i.e., "Kuladiva, son of Kulakaga."

'After crossing another dry *nala* we come to two boulders, one of them has a *stupa* and another has an inscription in 6th century writing, reading:

Namo Buddhaya, Krishnadevasya, i.e., "Salutation to the Buddha of Krishnadeva."

Then we get a prancing horse facing right.

Further we get a late inscription reading *Vashama*, and still further a *stupa* topped by crescent. Another late inscription reads: *Sri Prajapadisya Paradharmena kara*, i.e., "The work by Paradharma of Sri Prajapati."

One small rock, at the edge of the dry bed, has a hunting scene, in which a man is shooting at a solid rhinoceros. One inscription reads:

Kurajaya-putra, Devapa (*la*) i.e., "Devapala, son of Kurajaya."

Then comes a place where we have a temple and several inscriptions. Further ahead we have an opening, showing carved boulders. On a boulder the inscription reads: On top:

Sri Rama Vishnusya, i.e., "Of Sri Rama Vishnu."

On Bottom: *Sri Ladidasya*, i.e., "Of Sri Ladida."

On a flat rock an inscription in Kushana Kharoshthi gives the name *Daika.* Nearby there is a Sogdian inscription in four lines. Then we get a second Kharoshthi of the same time, reading: *Misoksa*, i.e., "Of Misoka." Another inscription of the 5th century reads: *Sri Indravishna* (*u*) *sya*, i.e., "Of Indravishnu."

On the right a three-line Brahmi inscription reads:

Om namo yato Buddhaya
sarvasatvahitaya sarvalokaya
satya-sthita siddhaya Vrisyasya

i.e., "Om, Salutation to the revered Buddha, for the good of all the beings, for all the worlds, of Vrisya, the accomplished (and) firm in faith."

A late Brahmi inscription reads: *Sri Ramasrutasya.*

After crossing another dry *nala* we come to a place right opposite Chilas II where we have a beautiful *stupa* on a washed rock and inscription in 5th century writing, reading:

Kulajaya, Bhadrila, Adisomo Viprah, and *Sri Sudamachandra raja.*

Another late writing gives the reading: *Kriti kashta jaya* probably meaning "Victory of Kriti-kashta."

Further ahead on a boulder close to the hill before the entrance of Khomar site we have a late hunting scene in which a dog is running after an ibex but the man is standing. Below we have three ibexes in outline. Still further we have a temple, consisting of a tall base, a sanctum and a triangular *sikhara* with a finial. To the right of the temple an inscription reads:

Om devadharmo kritam,
Om Vayatranamotrarikena kritosya

i.e., "Om. This is the divine gift made. Om. This is the work made by Vayatranam-otrarika."

And finally we have the name *Sri Jayabhagadata*. Then we come to the representation of a flower on the top and the last two inscriptions, reading *Baljaya* and *Ghrishtavasya*.

'We pass the Little Khomar and come to the Big Khomar where there is an opening at the Deva site. Then the river Indus has eroded the right bank and reached the very foot of the northern hill. Hence one has to walk right over the hill and come down to the carving of Hodur at the foot of the hill or descend on to the Hodur fort. At Hodur quite a new picture is presented. The path lies further ahead towards Thor and thus the pilgrim follows the Indus bank right upto Shatial, where the largest concentration of inscriptions and *stupa* drawing can be seen. Here we come to the end of our journey in the Chilas zone.'

D. Bamiyan (Afghanistan)

'Just imagine the religious festivals of those great days,' said Ahmad Ali Khozad, the topmost scholar of Afghan history. 'This fabulous setting, the bonzes with tonsured heads in flowing robes of ochre and saffron, the

procession, the banners, the music, the flowers, the statues in their full glory, painted in many colours and decked with gold. Imagine this place teeming with life, the crowds, the bazaars, the caravans, the story-tellers, the jesters. This was the Bamiyan seen and noted by Hiuen-Tsang, a Chinese pilgrim of the seventh century.' He broke off with a sigh, 'See what is left.'

The rock-cut Buddhist shrines at Bamiyan, situated some 250 km. north-west of Kabul in Afghanistan, between the snow-covered ranges of the Kohi-Baba and the Hindukush, can boast of the two tallest statues of Lord Buddha (55 and 38 m. high) in the world. These statues fill the firmament like the cosmos itself. They were excavated on a scarp of the Hindukush mountain and constitute a unique heritage of mankind.

These shrines symbolize age-old cultural ties of India with Afghanistan. Art treasures, wherever they may be in this wide world, are part of man's rich heritage — something which binds on a profound and sensitive level.

The gorge of the Bamiyan is the threshold of the valley of dead gods, that vast oasis lying 10,000 ft. high among wild uninhabited mountain ranges, watered by silver streams, green with trees and gardens, and guarded by scarlet cliffs. When we see, we understand why travellers, pilgrims, poets, princes and sages loved it and considered it a sacred spot. By way of this remote valley Buddhism spread from India to the Far East and penetrated into Tibet, China and Japan. Once Bamiyan was an important centre on the route to India, Central Asia and China in the east and the Iranian and the Greek, Roman and Byzantine world in the west. It had become a meeting-place of ideas and a renowned centre of culture like Nalanda, Ajanta and Ellora in India.

We can have the best view of the Buddhist site in its entirety from the terrace of the Bamiyan Hotel. Commanding the narrow but extremely picturesque valley of Bamiyan and cut into the mother rock are two of the tallest Buddha images the world has ever seen. As far as our eyes can see, we see the facades of hundreds of caves from one end of the valley to the other, some of them being of no mean pretensions architecturally and sculpturally, apart from the vestiges of paintings. The statues have been carved 400 yards apart from one another on the face of the cliff. The Small Buddha (as high as a modern twelve-storeyed building) was carved around the third century A.D., while the Big Buddha (as high as a modern eighteen-storeyed building) came into existence a couple of centuries later.

The faces of both the images, unfortunately, are mutilated but the total effect still inspires overwhelming reverence. In the statue of the Big Buddha, the proportions are more harmonious. The rendition of the drapery was also accomplished by an entirely new method. Here we see the final development of the local style. In order to see the view as it was during the days of its greatest splendour, we should imagine the facades of all the caves painted in rich polychromatic hues, enhanced by sculptured figures, also painted. The colossal statues were coloured and glistened with ornaments, the smaller in blue, the larger in red, faces and hands gilded. There were *stupas* and buildings all along the base of the cliff such as the king's monastery mentioned by Hiuen-Tsang which were bedecked with banners and canopies.

A beginning was made during the Kushan period and the entire valley was converted into an array of monasteries and shrines, which were duly embellished with carvings and paintings. The art of Bamiyan represents a unique amalgam of the Hellenistic, Scythian, Sassanian and Indian traditions. These monastic establishments flourished for well over half a millennium. The colossal figures were hewn out as much to impress the onlookers as they were

expressions of the concept of a spiritual *chakravartin*. The idea of the spiritual *chakravartin* found its physical form here. The rock-cut shrines at Bamiyan overlooked the routes along which the caravans passed and the caravans must have looked upon them as protective deities.

Fa-Hien passed through Bamiyan in *c.*400 A.D. He speaks of over a thousand monks in attendance there and describes in detail an assembly of monks held with great ceremony. Hiuen-Tsang, the Chinese traveller who came here in 632 A.D., writes about the people of Bamiyan: 'These people are remarkable, among all their neighbours, for a love of religion; from the highest form of worship to the three jewels (Buddha), down to the worship of the hundred spirits, there is not the least absence of earnestness and the utmost devotion of heart.' He also records, 'There are more than ten convents and more than 1,000 priests. They belong to the Little Vehicle (Hinayana), and follow the school of the Lokttaravadins.'

Hiuen-Tsang thought the Big Buddha to be 'of a brilliant golden colour and resplendent with ornamentation of precious substances'. He mistook the Small Buddha to be of bronze, 'the pieces of which had been cast separately and then welded together into one figure'. The Big Buddha still carries traces of paint and gold. The curvilinear ceiling of the niche and the side-walls still show remnants of wall paintings of great beauty, fragmentary though they have become on account of prolonged exposure to the elements. The draftsmanship and the style and colouring show a distinct affinity with the Buddhist School of Painting in India. In fact, the paintings would appear to be very familiar to a visitor who has seen the paintings at Ajanta, Bagh and Badami.

The Small Buddha image shows traces of colour here and there and the curvilinear ceiling of the niche and the side-walls still carry remnants of wall-paintings which show a different subject matter in style. Rowland has observed that the style of these paintings is Sassanian.

The paintings on the curvilinear ceilings of the two niches and on the side-walls have suffered much damage due to physical and chemical weathering. The numerous grottoes and caves around the niche of the Small Buddha were also once embellished profusely with mural paintings of great charm. Much of the painting is now lost due to extensive damage caused by tar and smoke from fires lit inside the caves in the past. These tempera paintings show extensive flaking on account of the deterioration of the water-soluble binding medium. The mud-plaster which served as the ground for the paintings has also become very weak and comes off the conglomerate surface here and there. Many paintings have been obscured and obliterated and hidden from view due to thick accretion of tarry and smoky matter, dust and dirt, cobwebs and insect nests. All these paintings were given an elaborate chemical treatment and have received a face-lift at the hands of Indian experts. Harmless organic solvents, detergents, and plastic solutions were used for their chemical cleaning and preservation.

To the people of this area, no faith could have suited better than the near existentialist philosophy of Lord Buddha, who had built his gospel on the belief that suffering (*dukha*) is the essence of the universe.

Islam replaced three centuries of Buddhism when Chenghis Khan pushed thus far. He besieged the city and during the siege, to the great misfortune of Bamiyan, his grandson, Mutufer, was killed. To pacify Mutufer's mother, who came to him crying, Chenghis Khan took the vow that not a living soul would be allowed to remain in the city. And he kept his word! When it fell, they slaughtered not only the entire population but also every animal. Since then

the ruins have been called Mag Boligh (Ill-fated city).

Thus the valley witnessed man's most fanatical and murderous tendencies. On one side were the giant statues whose unearthly smiles had been effaced by shots, and on the other were the ruins where every living thing had been slaughtered in one gigantic sacrifice.

Several agencies and persons had surveyed the monuments at Bamiyan in the past decades for preservation. A report on behalf of the UNESCO was also prepared, but a serious effort to save these monuments for posterity had yet to be made. Mrs. Indira Gandhi, Prime Minister of India, visited Bamiyan in May, 1969, when an announcement was made by her to take up the work of preservation in collaboration with the Royal Afghan Government. It was decided that the repair work should first be carried out to the Small Buddha, the right wall of the niche of which had been badly fractured. A buttress-wall which was constructed to support the fractured wall in the past was an incongruity.

The fractured portion of the wall was first strengthened by providing tie-rods fully embedded in the rock and then the buttress-wall was treated in a manner to make it merge with the rock-surface.

During the first four seasons commencing from 1969, work had been done on the Small Buddha; the Big Buddha was taken up for repairs later on. The officers to whom the credit for this work goes are Dr. B.B. Lal, Chief Archaeological Chemist, J.C. Nagpal, Chief Archaeological Chemist and R. Sengupta, Director (Conservation) of the Archaeological Survey of India. The completion of this important work of conservation and preservation in 1977 during the tenure of M.N. Deshpande as Director General brought international appreciation to the Archaeological Survey of India. The monuments were handed over to the Afghan Minister of Culture by Atal Behari Vajpayee, the then Minister for External Affairs, Government of India.

To conclude, Arnold J. Toynbee writes in *Between Oxus and Jumna*: 'The practice of Buddhism has been extinct in Bamiyan for perhaps eleven hundred years by now, yet the peace which the practice brought with it still reigns there. You will feel it if you look out across the valley in the moonlight. There is peace in the glistening white poplar-trunks. There is peace in the shadowy shapes of the Buddhas and the caves. As you gaze, this Buddhist peace will come "dropping slow" upon your restless ... soul.'

Glossary

A-Group Culture Name given for convenience to a culture of Upper Egypt and Nubia. Distinctive cultural traits: polished stone axes; chert blades; copper and bone tools; painted and plain red pottery; houses of stone rubble; crouched human burial. Date: about 3400-2700 B.C.

Ahar Culture Named after the type-site Ahar in Rajasthan. Also known as the Banas Culture, after the river of the same name. Distinctive houses variously of wattle-and-daub, stone rubble, mud bricks, and kiln-burnt bricks. Extent: mainly south-eastern Rajasthan. Date: about 1800-1200 B.C.

Antennae Sword Sword with the hilt bifurcating like the antennae of insects. Found as a distinctive item amongst 'Copper Hoards'. Date: about 1900-1300 B.C.

Anthropomorphic Figure (From Gk. anthropos = man, and morphe = form) Representation of human form, found as a distinctive item amongst 'Copper Hoards'. Date: about 1900-1300 B.C.

Archaeomagnetism (From Gk. arkhaios = ancient and magnetism) Measurement of magnetism on ancient objects. The method is based on the fact that baked clay materials, such as pottery, bricks, etc., contain oxides of iron which are magnetic. These materials acquire thermoremnent magnetization in the direction of and proportional to the ambient magnetic field at the time of baking. Thus, by measuring the magnetization of bricks, pottery, etc. belonging to different known ages, data can be collected in regard to the secular variations in the direction and intensity of the earth's magnetic field in the past. In turn, when sufficient data are available for any geographical location, archaeomagnetic measurements on suitable samples can be used for determining the 'data' of their baking, if the same is not known. Samples thus dated help in dating the associated archaeological strata and other finds therein.

Ash-Mound Mounds formed by cycles of accumulation and conflagration of dung and stockage in cattle-pens associated with the Southern Neolithic Culture. Date: about 2000-1000 B.C.

Awl Pointed tool of stone, bone or metal, used for piercing hole in leather, wood, etc.

Banas Culture See Ahar Culture.

Bificial Flaked on both dorsal (upper) and ventral (lower) faces.

Black-and-Red Ware Pottery whose interior and the top part of the exterior are black and the lower part of the exterior is red. This colour-effect is produced by putting the pot upside-down in the kiln. In India, such pottery appeared as early as 2000 B.C., and continued, of course, wih modifications, up to the beginning of the Christian era.

Black-on-Red Ware Pottery of red colour with paintings in black.

Borer See Awl.

Bos Namadicus Fale Wild ox or Asiatic urus found in India in Middle to Upper Pleistocene deposits.

Brahmi An Indian script dating back to about fourth century B.C. From it were derived most of the later scripts of the country and of Tibet, Ceylon and the Far-Eastern archipelago.

Bronzes The term connotes statues and statuettes cast in bronze (an alloy of tin and copper).

Burin (Fr. burin = graver) Tool made usually on a stone blade by flaking its sides at one end, so that they form a narrow chisel-edge at the meeting point. Used for engraving.

Burnisher Tool of varying material used for providing lustrous finish to pottery.

Carbon-14 Dating A method of dating the past. It is based on the fact that Carbon-14, a radioactive form of carbon, is being continuously produced in the atmosphere and becomes a part of all living organisms. Plants incorporate it by photosynthesis. Animals live off plants, and thus they also contain Carbon-14. The radiocarbon gets widely dispersed on the earth by the carbon cycle. A living organism contains radioactive carbon (Carbon-14) and normal carbon (Carbon-12) atoms in a fixed proportion. Once an organism is dead, it does not receive any fresh supply of Carbon-14. On the other hand, the Carbon-14 content of the material begins to diminish with time, according to known radioactive disintegration laws. As an illustration, the number of Carbon-14 atoms expected to be left after time-lapses of 5730, 11460 (2×5730) and 17190 (3×5730) years are, respectively, 1/2, 1/4 and 1/8 of the original number of atoms present. The half-life of Carbon-14, as is obvious from the above examples, is 5730 years which is the time in which half the number of Carbon-14 atoms present initially undergo radioactive decay.

The known rate of decay of Carbon-14, combined with the facts that all living matter contains Carbon-14 and Carbon-12 in a fixed proportion and that the latter does not decay, forms the basis of the method of radiocarbon dating. The 'dates' of organic objects are, in turn, the dates of the archaeological cultures in which the objects occur.

C-Group Culture Name given, for convenience, to a culture of Upper Egypt and Nubia. Distinctive cultural traits: black-and-red pottery with white-filled incised decorations on the exterior; circular huts of stone rubble; tools of copper; crouched human burial. Date: about 2300-1600 B.C.

Celt (From Latin celtes = stone-chisel), axe or adze of stone, bronze or iron. The one in stone is a type-tool of the Neolithic times. It was made by chipping, pecking and grinding, the last-named process giving it a smooth (polished) surface. It has a sharp, usually convex cutting edge. The butt may be pointed or square and the section oval or rectangular. Used either by holding it direct in the hand or by hafting it to a wooden handle. It has many varieties, for example, bar-celt, shouldered celt, trunnion celt, shoe-last celt, etc.

Central Indian Chalcolithic Culture So called due to its area of occurrence. Distinctive cultural traits; black-on-red pottery known as the Malwa Ware; microliths; copper implements; wattle-and-daub and mud-brick houses. Extent: mainly southern Madhya Pradesh. Date: about 1700-1200 B.C.

Chalcolithic (From Gk. khalkos = copper and lithos = stone) The age when both copper and stone were in use: It succeeded the neolithic, retaining all the latter's features, but was marked off by the appearance of copper.

Chopper An Early Stone Age tool made on pebble by flaking a part of the periphery on the upper face. Used for cutting or scraping.

Chopping Tool An Early Stone Age tool, made on pebble by flaking a part of the periphery on both lower and upper faces, used for cutting.

Cleaver An Early Stone Age tool having a wide chisel-edge formed by the intersection of two large flake-scars.

'Copper Hoards' Name given, for convenience, to a characteristic group of copper objects, found mostly in hoards. They comprise flat, shouldered and bar-like celts, rings, harpoons, antennae swords, anthropomorphic figures, etc. Distribution: mainly Uttar Pradesh, Bihar, Orissa and Madhya Pradesh, but extending upto Gujarat and Mysore. Date: about 1900-1300 B.C.

'Dark Age' Name given by earlier writers, owing to paucity of data, to the period between the end of the Harappan Culture (about 1700 B.C.) and the beginning of the historical period (about the middle of the first millennium B.C.)

Eastern Neolithic Culture So called due to its area of occurrence. Distinctive cultural traits: polished stone axes, mostly with a rectangular section; occasional occurrence of shouldered hoes; coarse, brownish-red pottery. Extent: Assam, West Bengal, south Bihar and Orissa. Date: Not yet determined, but may be around 1000 B.C.

Extrados External curved surface of arch, dome, etc.

Grouting Process of injecting fluid cement mixture into voids in masonry for strengthening purposes.

Gunite (Also known as shot-crete) Pneumatically-placed concrete. In this process, to the dry sand-and-cement mixture, water is mechanically added at the nozzle of the gun.

Handaxe Almond or pear-shaped tool, made by removing flakes usually from both upper and lower faces. Found mostly in Early Stone Age context. The term has gained currency, though the tool need not necessarily have been used by hand alone; nor is the working edge (generally pointed) like that of an axe.

Harappa Culture Name after the type-site Harappa in West Punjab (Pakistan). Also known as the Indus Civilization, after the principal river of the region. Distinctive cultural traits: sturdy, red pottery, with designs painted in black; terracotta figurines and 'cakes'; vessels and implements of bronze; blades and weights of chert; seals and sealings bearing script; discoid beads of steatite; structures of mud bricks and kiln-burnt bricks, with systematic town planning; extended human burials. Extent: from Baluchistan to western Utter Pradesh, and from Punjab to Gujarat. Date: about 2400-1700 B.C.

Harpoon Missile of bone, antler or metal, comprising a barbed, pointed head and a barbed shaft. Used for capturing under-water mammals and fish, by tying it (the harpoon) to a rope or string and throwing the same either direct by hand or with the help of a throwing stick.

Holocene (From Gk. holos = whole and kainos = recent) Geological period following the Pleistocene and extending up to the present. It began about 10,000 years ago.

Industry An assemblage of tools or other artefacts of a similar kind found in the same culture-context.

Intrados Internal curved surface or arch, dome, etc.

Jorwe Ware Named after site of the same name in Maharashtra. Red pottery; often with matt surface, bearing paintings in black. Typical shapes include sharply-carinated bowls and vessels, the latter having long tubular spout. It forms a characteristic industry of the Northern Deccan Chalcolithic Culture. Date: about 1600-1000 B.C.

Kharoshthi A script prevalent in north-western parts of the Indo-Pakistan subcontinent from the third century B.C. to the third-century A.D. In the neighbouring countries, it seems to have persisted even later. It was written from right to left.

Levalloisean Special technique in the making of Stone Age tools. First the core was carefully trimmed and a platform prepared. Then, by striking at the platform a large flake was removed from the core. Named after a locality near Paris where flakes made by this technique were first recognised.

'Madrasian' Early Stone Age culture of southern India, characterized by bifacial handaxes and cleavers. So called due to the first discovery of such tools near Madras.

Malwa Ware Named after the region, Malwa (an old geographical name for south-western part of Madhya Pradesh), where this typical pottery is found. It has a pale-brown to red surface and is painted with designs in black or chocolate colour. Typical shapes include the channel-spouted bowl and stemmed chalice. It forms a characteristic industry of the Central Indian Chalcolithic Culture. Date: about 1700-1000 B.C.

Megaliths (From Gk. megas = great, and lithos = stone) Funerary or commemorative monuments characterised by the use of large stones in their make-up. They are of various types; for example, dolmens, dolmenoid cists, pit-burials, urn or sacrophagus-burials, 'umbrella'-stones or 'hat'-stones (Tamil topi-kal), hood-stones, multiple hood-stone, menhire, etc. Many of them are superficially demarcated by the circle or circles of stone. While the cultural association of megaliths in eastern and north-eastern India has yet to be worked out, those in the south are associated with iron implements and black-and-red pottery and are datable approximately to 1000 B.C.-100 A.D.

Microliths (From Gk. mikros = small, and lithos = stone) Tiny tools made on fine grained stones like quartz, chalcedony, jasper, agate, carnelian and chert. On the basis of shape, these are classified into two categories: non-geometric, comprising blades, borers, points, etc., and geometric, marked out by trapezes and triangles. Available evidence indicates that the former category might be earlier, going back to about 6000 B.C.

Middle Stone Age Part of the Stone Age falling between the Early and the Late. It is characterized by medium-sized tools made of fine-grained stones such as jasper, chert, etc., and comprising points, borers, a variety of scrapers and occasional blades and burins.

Nasta'liq A decorative style of the Arabic script. It came into being in the fourteenth century A.D., having evolved from the Naskh and Ta'liq styles. The letters in it are more round than those in the Naskh.

Neolithic (From Gk. Neos = new, and lithos = stone) Also called the New Stone Age. It followed the Late Stone Age and preceded the chalcolithic. In contrast to earlier Stone Ages, it is characterized by: the polishing of stone tools; settled, community living; agriculture; domestication of animals; and, not unoften, pottery. Although elsewhere the neolithic stage had been reached by about 7000 B.C., on the Indo-Pakistan subcontinent, the corresponding stage might not be earlier than 4000 B.C.

North-western Neolithic Culture So called due to its area of occurrence. Distinctive cultural traits: polished stone axes; bone tools; mat-impressed grey pottery; dwelling-pits. Extent: Kashmir Valley. Date: about 2000-1000 B.C.

Northern Black Polished Ware (N.B.P. Ware) A distinctive pottery with a highly lustrous surface, usually black but sometimes steel-grey, silvery or golden. It is wheel-made, normally thin-sectioned and well-fired, giving a metallic ring. The more common shapes are bowls and dishes, though lids, sharply-carinated *handis*, etc., also occur. Distribution: main concentration in northern India but found as far away as Afghanistan, Orissa and Andhra Pradesh. Date: about 600-200 B.C.

Northern Deccan Chalcolithic Culture So called due to its area of occurrence. Distinctive cultural traits: matt-surfaced red pottery, with paintings in black (Jorwe Ware); microliths; copper implements; polished stone axes; urn-burials. Extent: mainly Maharashtra. Date: about 1500-1000 B.C.

Ochre Colour Ware Orange to deep-red pottery, found so far mostly in a worn-out condition — to the extent that the surface rubs off by mere handling, leaving an ochrous colour on the fingers. Hence the name. Extent: upper Ganga Valley. Date: prior to 1200 B.C.

Painted Grey Ware Pottery of the grey colour painted with linear and dotted patterns in black. It is wheel-made, thin-sectioned and well-fired, the more common shapes being bowls and dishes. Distribution: mainly Punjab, Delhi, Uttar Pradesh and northern Rajasthan. Date: about 1100-600 B.C.

Painted Grey Ware Culture Named, for convenience, after the Ware. Distinctive cultural traits: Painted Grey Ware; copper in early stages, but soon supplemented by iron: wattle-and-daub houses; rice; horse. Extent: mainly Punjab, Uttar Pradesh and northern Rajasthan. Date: about 1100-600 B.C.

'Pebble-handaxe' Made of pebble, it differs from the handaxe in that the upper face alone is flaked, of which the butt-end also remains unworked.

Pleistocene (From Gk. pleistos = most, and kainos = new, recent) Geological period immediately preceding the present (Holocene). It was in the earlier part of this Period that man appeared. The Period is also marked by the appearance of the true ox, true elephant and true horse. Possible duration: 500,000 to 1,000,000 years.

Point Tool of stone, bone or metal, having a sharp end, and presumably used as arrow-head.

Polished Stone Tool Stone tool having a sharp, usually convex, cutting edge, and pointed or squarish butt. Made by chipping, pecking and grinding, the last-named process giving the tool a smooth (polished) surface. Used either by holding it direct in the hand or by hafting it to a handle. Characteristic tool of the Neolithic times.

Post-cremation Burial Burial of charred human bones after-cremation.

Prehistoric Period (from Latin pre or prae = before, and history) The period before the beginning of recorded history. Usually, the Stone Ages are covered by it.

Proto-historic Period (From Gk. protos = first, and history.) Literally, the period of first, i.e., earliest, history. In India, the term is vaguely but usually applied to the period falling between the end of the Late Stone Age (which itself is not a well-defined point but might be around 4000 B.C.) and the beginning of regular history with the Mauryas in the fourth century B.C. Thus, in it are included not only the Indus Civilization, in which the art of writing (leading to documentation) was known, but also other cultures, though materially less advanced, which preceded the historical period.

Punch-marked Coins Squarish or oblong coins of silver or copper characterized by a series of punched symbols. Date: 600-200 B.C.

Qualnama Treaty or written agreement.

Rock-shelters Places sheltered by overhanging rocks, including natural large-sized cavities in rock-faces, used as dwelling by pre-historic man.

Rouletted Ware Pottery characterized by concentric dotted bands produced with the help of a roulette (a toothed wheel). The characteristic shape is a dish with incurved rim, the rouletted pattern occurring on the interior of the base. The Ware is wheel-made, fine-grained, and grey to black in colour. It is well-fired, often giving a metallic ring. The rouletted design was probably copied from its counterpart on contemporary Mediterranean wares. Distribution: mainly south India, but examples found along the coast up to West Bengal. Date: from about the beginning of the Christian era to A.D. 200.

Russetcoated Painted Ware Pottery having rectilinear or curvilinear designs in lime or kaolin paste over which was applied a coating of russet-coloured ochre. The main shapes are bowls and dishes. Distribution: mainly south India. Date· about A.D. 50-200.

Scraper Implement of stone; bone or metal having a specially-prepared scraping-edge. Used for scraping hides, smoothening wood, etc. It has many varieties, for example, straight-sided, convex, round, keel-shaped, hollow, etc.

Seshanaga Also known as Sesha or Ananta or the World Serpent. This mythical serpent is believed to carry the Earth on his head whose slightest movement causes earthquakes. He is also associated with Vishnu who rests on the former's coils, shaped by canopy-like hoods.

Slip Liquid clay of the creamy consistency, applied as a coating on pottery before firing. Hence, slipped pottery.

Southern Neolithic Culture So called due to its area of occurrence. Distinctive cultural traits: polished stone axes; mostly with pointed butt and oval section; burnished grey ware; microliths; human burials — extended for adults and urn-burials for infants; houses of stone rubble or wattle-and-daub. Extent: Andhra Pradesh, Tamil Nadu and Karnataka States. Date: about 2300-1000 B.C., but continued, with the amalgamation of chalcolithic traits, to the middle of the first millennium B.C.

Teri-sites Sites associated with dunes of reddened sand, located in the coastal district of Tinnevelly, Tamil Nadu. Found on the dunes are microliths of the Late Stone Age.

Terracottas (From L. and Lt. tera = earth; L. Cocta and Lt. cotta = baked.) The term connotes statuettes and figurines made of baked clay.

Unificial Flaked on one face only.

Ware The term is used to denote any specific kind of pottery. It is also used to denote the fabric.

Courtesy:- Indian Archaeology since Independence by B.B. Lal

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I

Amar Nath Khanna was born at Multan in West Punjab in 1936. He holds a Master's Degree in History from the University of Rajasthan, Jaipur, and a post-graduate Diploma in Archaeology from the School of Archaeology, now known as the Institute of Archaeology, Archaeological Survey of India, New Delhi. Khanna has had the rare opportunity of visiting and studying hundreds of monuments and sites scattered all over India and Nepal during the last three decades. He has been actively associated with archaeological explorations and excavations. He has been the Registering Officer for Antiquities in Himachal Pradesh and has been associated with Rajeev Sethi in the Festival of India, U.S.A., and with Pupul Jayakar, Adviser to Prime Minister on Heritage and Cultural Resources, in the Festivals of India held in the U.S.A. and Japan and the Year of India in France. Presently he is a senior officer working with the President of India. He was a member of the Presidential Delegation which had visited Japan in 1990.

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